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NEWS IN BRIEF

Double power Univac mini

A NEW model in the Univac V77 line of minicomputers is on the way. Called the V77/800, it will offer about twice the power of the present top-of-the-line V77/600. At the time that Univac opened negotiations to acquire Varian Data Machines, turnover was running at about $40 million per annum; it has now doubled to $80 million.

ACM award

THIS year's ACM Grace Hopper Award of $1,000 has been won by Raymond Kurzwell, president of the firm in Cambridge, Massachusetts, that developed a machine for reading books aloud to the blind (CW, March 30). The Hopper Award is presented by the Association for Computing Machinery to the person under 30 considered to have made the year's most significant contribution to the industry. The Kurzweil machine is a powerful OCR system coupled to a voice synthesiser.

Dialog meeting

A USERS' meeting for customers of the Lockheed Dialog online retrieval service is to be held at the Tara Hotel, London, on December 4. Roger Summit, manager of the service and whose brain-child it is, will be present.

Share swap offer

THE proposed acquisition of Microdata by Addressograph-Multigraph, announced last week (CW, November 16) looks likely to go ahead. Addressograph-Multigraph is offering a share swap which values the California minimaker at about $47 million.

Belle of the Brighton (online) bar . . .

AN interactive accounting system based on NCR hotel equipment is being used by the Gatwick Park Hotel in Horley, Surrey, to handle its front desk and restaurant sales transactions.

The main accounting functions are controlled by an NCR 8250 back-office computer, but an NCR 250/800 has been installed at the front desk to enable hotel receptionists to check in guests and assign charge accounts. Current room rates and guest balances are held in the 9000's memory.

For the Pavilion Restaurant and Brighton Belle Bar at the hotel, transactions are handled by two NCR 250/9000s. Guests can charge their drinks to their room bill via the 9000s, as they are linked online to the front desk terminal.

● Our photograph shows one of the Brighton Belle Bar ladies operating the NCR 280/5000.

Million billion bit memory for IBM future systems

A PATENT for a million billion bit memory system awarded recently to IBM's San Jose research laboratory gives the company the chance to produce one of the most powerful supercomputers of the future. If it ever reaches production, it will certainly be one of the coldest systems ever made.

The patent, entitled "Frequency selective optical data storage system," is for a supercooled, laser-based photochemical memory. It is the prospect of coupling such a memory system to other hardware, based on the superconducting Josephson junctions which IBM has developed, that leads to the possibility of a future supercooled computer of enormous power.

Though the company points out that considerable research still needs to be carried out to produce a working memory system, the patent specifically mentions one possible implementation.

This would be a memory capable of storing one million billion bits (10^{15}) in a physical area of about one square metre.

Based on a photochemical process called "hole burning", the invention depends on the use of another IBM invention, the frequency-tunable dye laser. The laser is directed onto a sample of a photo-reactive material that is cooled to about —270°C, a few degrees above absolute zero.

This produces a chemical change in the material that is directly related to the light frequency selected for the laser. The frequency-selected molecules are changed into a new compound, and no further light at that frequency will cause any change.

Univac in bank terminals deal

AN agreement between Univac and Bunker-Ramo on banking terminals will be announced shortly. Univac has been seeking a terminal to propose to its banking clients and came close to an agreement with Datasaab, which would also have involved Univac marketing Datasaab terminals in some countries (CWI, November 9).

2960 written off after blaze

A BRAND new dual ICL 2960 installed by the Swiss Bank in the City of London could be completely written off because of a fire in the air conditioning of the bank's computer suite. ICL says that there is evidence of chemical contamination, the effects of which are unknown.

The 2960s are now back with ICL and the Swiss Bank is continuing DP operations using its existing dual System 4/50 machines. According to ICL, work had not been transferred to the 2960s, although the translation of online systems has been going on since early this year when the 2960s were ordered (CW, February 2).

The fire itself was confined to the air conditioning, but ICL says that smoke was drawn into the computer room along with chemicals from some of the burning material in the air conditioning system.

ICL is unable to give the precise nature of the chemicals, but says that it has carried out tests that indicate that there is contamination that could have serious short and long term effects.

Buying a completely new dual 2960 system to replace the contaminated machines could cost the Swiss Bank's insurance company an estimated £1.5 million, although the bank is not prepared to comment at the moment on the cost.

Teachers' fears on funds discounted

FEARS of teachers that work on microprocessor education would deprive schools of money for basic needs such as textbooks, were discounted by Roy Atherton, former chairman of Minicomputers in Secondary Education. "It would be short-sighted," he said, "to deny funds for micros."

Education Secretary Shirley Williams wrote to education authorities and teachers' unions proposing a national programme in schools on micro education (CW, November 16) and the National Union of Teachers replied by saying it would be very difficult for schools to cope with the extra expenditure needed for equipment when they cannot even replace basic textbooks owing to rising costs at present.

"The money has to be provided," said a spokesman.

The spokesman added that the union recognises that micros are an important area, and that its Educational Technology Working Party is studying the matter.

Guidelines on signing service contracts

POINTS to be watched when signing contracts for batch and remote access bureau services, turnkey systems and consultancy services are listed in the guidelines for computer service contracts from the Computing Services Association (CW, October 26).

For each type of contract the guidelines include a section on the standard terms and conditions that should appear in all contracts signed with CSA members.

With turnkey contracts, the customer is warned to check the terms and conditions to establish, for example, whether he or the supplier is responsible for preparing the site for the system and who is responsible for insuring the hardware up to the time it is installed and accepted. The customer is also advised to agree a formal procedure with the supplier on how any variation to the system should be implemented.

According to the guidelines, the terms and conditions for batch bureau service contracts should include sections on confidentiality, access to the system for the customer's auditors, and warranties protecting the customer from faults in the bureau's software.

● The complete set of guidelines covers 13 pages and costs £25. It also includes sections on software development contracts and software licences. See Software File, Page 7.

Basingstoke move

A MOVE to Basingstoke is on the cards for several hundred people in IBM's General Business Group currently working at various London locations.

IBM is negotiating a 25-year lease on a 157,000 square foot office building under construction by the Greater London Council pension fund in Alencon Link, Basingstoke. IBM has yet to decide which functions of the General Business Group—office products and small computers — will be moved to Basingstoke, but it has been estimated that the move will begin in 1980.

UK hardware exports up

A SIGNIFICANT increase in the UK's overseas trade in computer equipment between the first and second quarters of 1978 is shown in the latest set of Business Monitor statistics from the Department of Industry. Exports accounted for nearly 75% of total sales by UK computer hardware manufacturers in the second quarter. The figures show that total exports by UK manufacturers increased from £106 million to £143 million.

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Briefing

VW-Nixdorf deal is off

TALKS between Volkswagen and Nixdorf about the motor giant taking a stake in West Germany's leading small systems manufacturer have been terminated. Nixdorf was not prepared to concede the 50% stake that Volkswagen wanted.

As Computer Weekly went to press, Nixdorf was preparing to announce the name of another possible partner.

Information Bill

WINNER of the annual Private Member's Bill ballot this year is Clement Freud, Liberal MP for the Isle of Ely, who has chosen Freedom of Information as the topic. Freud said, "Both front benches are against it, but I expect a large measure of backbench support from both sides."

Bantam debut

THE menagerie of Perkin-Elmer peripheral products has a new member, the Bantam low-cost, full-function display terminal. Making its European debut at Compec alongside the distinctive Owl display, the Bantam uses custom-built LSI circuitry and will sell for about £550.

Micro site hold-up

"DISCUSSIONS outside the control of the two companies" are holding up the final selection of a site for the GEC-Fairchild semiconductor factory, according to GEC. But the two companies have basically settled on a location, and are ready to sign.

New Year fun

The New Year will start with one of the most original computing events for many years — the BCS 79 Living with Computing conference from January 4 to 6. Next year is the International Year of the Child and, appropriately, BCS 79 has a special Saturday children's fun fair, while on the other days the BCS specialist groups will be the focus of attention. Full details and application form — page 9.

Major WP deal

WHAT is believed to be the biggest order yet for shared logic word processing equipment has been placed with Four-Phase Systems by the US Social Security Administration. Valued at more than £2½ million, the order involves 540 work stations. The SSA is already a major user of Four-Phase word processing kits.

ICL £1m order

STRENGTHENING its position in the retail sector, ICL has won a £1 million order from Dixons Photographic for equipment that includes a two Megabyte 2960 that will replace Dixons' Univac 9380. Software conversion will be handled by Dataskil and is scheduled to be completed by May next year when the 2960 will be installed at Dixons' Edgware headquarters.

E-Series now expected early January

THE forthcoming IBM E-Series replacement for low and mid-range 370s is now set for announcement in the first or second week in January — and, unlike the new 8100 and System 38, will be offered for delivery shortly after announcement.

This is the view of Aharon Orlansky, a vice-president specialising in the computer industry at New York stockbrokers Oppenheimer & Co.

"The reason for the delay in announcing the E-Series is that it falls in the middle of IBM's market range, where the company has been losing share for years, and IBM wants to make quite sure that its attack will be effective before making the announcement," he told Computer Weekly.

Orlansky believes that the 8100 distributed processing system and System 38 provide strong pointers to the nature of the E-Series, but the unbundling of software could well go even further.

"I believe that they will try to charge for use of the software wherever possible," he said. Usage pricing of software was pioneered by Control Data with a mathematics package, Apex III, at the beginning of the year (CW, January 5), and CDC has since told Computer Weekly that it is considering applying the policy to other software products.

Orlansky expects that much of the technology in the System 38 will also be found in the E-Series, and expects it to feature a similar approach to storage, with disc storage treated as a logical extension of main memory.

"IBM has already received twice as many orders for 8100s as it has production capacity to deliver in 1980," added Orlansky. "I do not expect this to happen with the E-Series: I think orders will be in line with IBM's capacity to produce." He added that there were already over 1,100 customers for 8100s in Europe.

Dale Kutnick, of the Yankee

● Turn to page 14

ENGEL . . . chairman of the ANSI Committee that produced the Fortran 77 standard.

Marathon effort

"OUR ambition for the Fortran 77 standard was that more user programs could be written entirely in Fortran and that Fortran programs would be more readily transportable between systems."

This was how Frank Engel, chairman of the ANSI committee that produced the Fortran 77 standard, summarised the marathon 12-year effort to upgrade the language.

A meeting was held in London this week under the auspices of the International Standards Organisation to discuss the new Fortran 82 standard and tomorrow (Friday) the BCS Fortran Specialist Group is holding a public Fortran Forum meeting at Imperial College, London, to discuss the new standard.

Engel, who will attend the Fortran Forum, was in London to accept honorary membership of the British Computer Society at its annual dinner on November 20. He spoke beforehand to Software File Editor Peter Hewitt on some of the obstacles in the path of language standardisation. See page 7.

PO runs out of modems

BECAUSE of an unexpectedly heavy demand for 2,400 bps Datel services using the most up-to-date equipment, the Modem 12, intending users are now having to wait up to six months for a modem to be installed. To overcome the Modem 12 shortage, the Post Office has placed an additional £4.5 million order with the manufacturers, SE Labs, an EMI company, and a spokesman said it was hoped that delays would be cut by half by the spring.

Datel 2412, the Post Office's inland service, formerly used versions of Modem 7, which was suitable only for the inland service. Modem 12 is also used on the International Datel 2400 service and this has been one of the factors causing the long lead time.

An SE Labs spokesman said the company had been more than meeting its contractual obligations and that it had the ability to respond very quickly to meet the increased demand. He said that the extra orders represented a 20 per cent boost in output and it was likely that extra staff would have to be taken on. More orders for modems are expected shortly but so far no details have been released.

Datel customer TCS Bureau, of Beckenham, has had Modem 12s on order for two months and expects to save time and money with them when they arrive, by using them in bulk batch transmissions where it had found Modem 7C not all that easy to use over dial-up lines.

Another modem supplier, Case of Rickmansworth, says it is being asked by users to supply modems for 2,400 bps operation but is unable to do so because it is not allowed to under the Post Office monopoly conditions.

In a further effort to improve its overall telecommunications services the Post Office is now evaluating the Time Encoded Speech voice digitising technique. This being developed by Bath University in co-operation with the Ministry of Defence (CW, July 27), and could be used to fit five or six times as many calls on to the same line as pulse

● Turn to page 14

'Schools must catch up'

UNLESS extra resources are made available immediately to enable schools to catch up with the rest of society in the use of new technology, the education system will fail to meet the challenges posed by the "micro revolution", according to David Tinsley, a general inspector of schools in Birmingham.

He was speaking this week at a conference organised by Stockport Education Authority on the impact of microelectronics.

Rockwell joins 16-bit micro market

AN official announcement is expected next month of yet another contender in the 16-bit microprocessor marketplace. This one will be from Rockwell Microelectronics, with a part currently designated Super 65.

Based on a bus structure that is largely compatible with the MOS Technology 6502, 8-bit processor, which Rockwell manufactures as a second source, it will have an instruction set capable of running Pascal. Rockwell is developing a compiler for the language.

Compatibility with the 6502, together with the use of Pascal, could well mean that the device will also be broadly compatible with Motorola's 68000, 16-bit processor. The 6502 was a derivation of the Motorola 6800 device, from which the 68000 was itself derived, and retains a large degree of compatibility with it.

Super 65 runs at a 10MHz clock rate and can address 2 Mbytes of memory directly. Some peripheral circuits are under development, including an 80 Mbyte memory management chip.

The company is said to be developing, for late next year, a silicon on sapphire version of the processor.

Opportunities

A REPORT on the opportunities for disabled people in industry is being prepared by the National Computing Centre. A draft copy of the report is currently being studied by the bodies that have contributed to it.

Post Office 'yes' to PSS

Confirming Computer Weekly's prediction last week that Plessey's bid of Telenet Processors for the Packet-Switched Service, PSS, would be successful, the Post Office has announced formal approval of the public packet-switched service.

First customer connections are due late next year and there will initially be nine exchanges, in London, Birmingham, Bristol, Cambridge, Edinburgh, Glasgow, Leeds, Manchester and Reading. There will be 48K bps links between the exchanges.

EPSS, the experimental service run by the Post Office — which is not compatible with the CCITT standards to which PSS will be built — will continue at least until the end of next year.

PSS will interface to both Euronet and the Post Office's forthcoming transatlantic international Packet-Switched Service, IPSS. The latter will also use Telenet Processors.

IN OUR 96-PAGE ISSUE FOR COMPEC 78 . . .

This week all roads lead to Olympia and the biggest Compec exhibition held so far. And to match this major industry event, Computer Weekly has published a record, two-section, 96-page issue.

Compec, which runs from December 5 to 7 in Olympia's National Hall, is the show which grew big by thinking small and applications for tickets are now well over the 23,000 mark, compared with about 8,000 last year. This section of Computer Weekly carries all the news, features and recruitment notices while the self-contained Compec preview with features, competitions and round-up of the show has been posted separately to readers.

FUTURE SKILLS

The impact of information technology on society will depend to a great extent on the capability of our education and training system to provide sufficient numbers with the appropriate skills to use the technology effectively. This week's special feature on Education and Training examines some of the practical work currently being implemented to ensure that these necessary resources are available.

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COMPUTERVIEW

Riding waves of Compec puff

NEXT WEEK'S Compec show at Olympia in London will be the orgasmic event of the year for many companies in the UK computer industry, before subsiding into Christmas time reverie until the new year.

Compec, like all major exhibitions all over the world, provides a host of new products, enhanced old products and fresh sales angles on some golden oldies. And the products and services on display will be accompanied by oceans of marketing words in the form of sales spiels from the salespersons and back-up brochure puff.

And computer industry news media, like Computer Weekly, are packed with previews, reviews and lots of advertisements, selling lots of products.

All this is, of course, a legitimate and important part of the free enterprise system and provides a valuable service to prospective buyers of equipment.

Yet the unsuspecting potential user could unless careful, drown in the sea of glossy information.

Last week in Computer Weekly, Nicholas Enticknap examined one particular user's experience when trying to unravel the facts behind the DEC VAX announcement and this week (page 4) he looks at the role of the Press in this "product announcement" process.

However, as he points out, one of the current facts of DP life is that suppliers have a sophisticated system via Press officers and marketing people for generating news on their services and for putting over their point of view.

Users, on the other hand, are generally pretty timid and/or disorganised when it comes to promoting their view in a positive, proactive way.

Instead, users are generally publicly silent or reactive, bitching about poor service in the most generalised terms, as in the recent BCS user requirements report (see back page).

Users visiting Compec next week should define their own needs *beforehand* and stick to that specification as a lifeline in the sea of marketing razzamatazz. And, even more importantly, they should resolve to take responsibility upon themselves to do more, in a more co-ordinated way to ensure that the industry thrust is not decided, as it has so often been in the past, by the needs for sales and marketing men to meet their budgets rather than by the user need to meet the business and administrative requirements of their own employers.

Ten years ago...

Arthur Humphreys (left), managing director of ICT, International Computers and Tabulators, and Bill Barlow, managing director of EEC, English Electric Computers, are pictured at the formal announcement of the establishment of ICL, International Computers Ltd, in Edinburgh in 1968. Each became joint managing director of ICL. Barlow is now Sir William Barlow, chairman of the Post Office, and Humphreys has retired. Last week, a dinner took place to mark the 10th anniversary of the formation of ICL.

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FOCUS

NEXT month the special events division of Infotech International is staging a three-day supercomputer conference. Presumably only super special DP managers need attend.

The arrival of supercomputers on to the DP scene will obviously call for a new breed of DP managers. These super managers will leave the rest of the DP profession in mass disarray.

According to the conference brochure, the course content will include such everyday DP problems as algorithm evaluation, radar pulse dis-interleaving and finding the smallest element of a vector and add fields.

The super manager, it seems, will have to be fully conversant with such techniques as the relative speeds of light, the resolution of X-rays and adjustable barrels: laser beams will not be limited to Oxford Street.

Part of the seminar is being devoted to relaxation nets, though whether these are being supplied to the delegates at the close of each day is not made clear.

What is clear is the impact the advent of supercomputers could have on the DP industry. Current trends towards distribution, mini and microprocessors and electronic offices would be stopped dead in their multi-purpose tracks. Floppy discs would have to stiffen their resistance. The users' brief but welcome power and prestige would be blown for several ensuing generations.

Henceforth, Compec will have to be staged as Magpec at a suitably enhanced exhibition venue. The Institute of Data Processing Management, having spent much time and effort in establishing industry micro business clubs, will have to change gear.

The gear in question is more likely to be Ampla than Apple. Pets will arrive mammoth-sized. Juggernauts will replace the slower machine cycle.

Early users are predictable. First on the super scene will be Swansea, seldom slow to accept a technological challenge. As a consequence, the current driving licence turmoil will be looked back on as a period akin to affection and admiration.

Other first-time users are expected to be the various defence ministries and notional police forces. Not only do they have the necessary funds and resources, but also the advantage of allowing little news of subsequent problems, hazards and disasters to filter out.

The universities will not be slow in latching on to the new computing concept. Thinking big is part and parcel of academic computing procedure. In fact Manchester University is already co-operating in the production of a very fast machine.

DP managers, however, will have certain reservations before they jump aboard any passing supercomputer bandwagon. Super, without doubt, will include the cost. DPMs are more involved in fast declining budgets than ever faster supercomputers.

Apart from the DPM's own capabilities, those of his team are seldom super-talented. Given the general lack of competence in getting up and running three buffered video terminals how would the same team cope with a multiple access port of 1,000 plus?

Super technology calls for super talents. Current techniques and systems are about as relevant to supercomputing as the desk top calculator or punch cords.

Who therefore is going to train and inform the required super breed of DP personnel? Even such noted computing establishments as Hatfield Polytechnic would be hard put to organise super classes.

Perhaps the sinister hand of the Data Protection Committee is behind the supercomputer promotion. If recent reports are correct, each and every UK DP installation will have to be monitored. This task would be somewhat easier if the number of installations were to be reduced. Amdahl and Cray would rule supreme.

THIS is a tale from the "good old pre-Georgian days" when ICL 900 systems ran mainly under "manual" Executive.

Most of the ops' time was then spent running the XQMY utility to scratch tapes, which required the allocation of a deck as program unit number 0, e.g.:

GI #XQMY 21 0

One lunch-time a freelance programmer was on a rush job and was given hands-on testing time. Within ten minutes he reported that the tape decks were not working. The shift-leader checked, called in the engineer, who spent several hours stripping and reassembling the decks, without discovering the fault.

In desperation, he reloaded Executive and, hey presto, all ran smoothly.

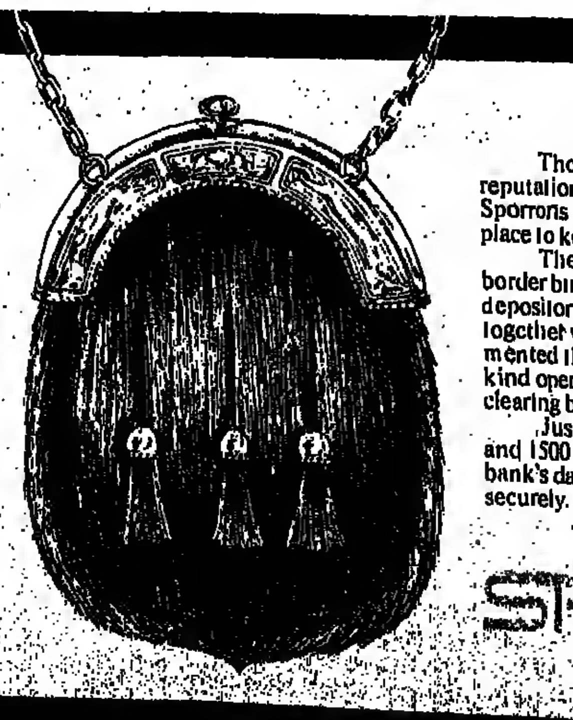
Now the morals of this tale are particularly clear — software is more likely than hardware to be a bug generator — and beware of letting software liveware (particularly of the freelance variety) free rein on the computer.

The fault, by the way, was that the programmer tried to be too clever by half and tried to zeroise two scratch two tapes at once with the instruction:

GI #XQMY 21 22 0

thereby assigning deck 21 as unit 22 and altering the recording mode to 0.

- **This week's £5 interrupt prize goes to W. Lewsey of Dursley, Glos.**



Sperry Univac has finally replaced the sporran.

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Algol 68 now available to 30 UK universities

THIRTY universities in the UK now have access to the Algol 68 compiler on the CDC 7600 machines at the University of Manchester Regional Computer Centre and last week, Professor A. van Wijngaarden, the "father" of Algol 68, inaugurated the service at Manchester.

The compiler was written by CDC Netherlands for the 6000 series and modified at Hanover for the 7600 machines. This new system will not only enable many current Algol 60 programs to be rewritten so as to double their execution speed, but the additional features available in Algol 68 will also facilitate many operations which could only be done with great difficulty using the software hitherto available.

- Pictured with Professor van Wijngaarden is Dr C. H. Lindsey (centre, standing), a leading expert on the language in the UK and a member of the Algol 68 design team, also two members of UMRCC staff, Mrs Joan Smith and Tom Bowman.

Motorola adds to the 6800 family

A LOW cost addition to the 6800 family of microprocessors, announced by Motorola, has a target price of $3 each in volume.

Known as the 6805, the device broadens the company's spread of 8-bit microprocessors by moving in the opposite direction from the 6801, which employs an enhanced version of the standard 6800 instruction set.

The 6805 has a depleted instruction, the design being based on stripping out the B accumulator from the CPU. This space is then used to incorporate a clock generator, 64 bytes of RAM and 1K byte of ROM.

Communication with the outside world is provided by an 8-bit timer and 20 I/O lines. These are configured as two 8-bit parallel ports and one 4-bit parallel port.

Using a low cost, 28-pin package, the device is capable of containing more ROM and RAM, together with specialised I/O facilities such as A/D and D/A converters. These are available as part of the company's custom design service, which has three add-ons as modules suitable for designing into the part as required.

- Motorola officially opened the latest addition to its East Kilbride semiconductor manufacturing plant last week at a ceremony conducted by Lord Clydesmuir, Lord Lieutenant for Lanarkshire. The 70,000 square foot, two-storey module effectively doubles the company's production capability of MOS devices in Europe.

Regrading claim

WHILE no satisfactory conclusion has been reached on the efforts of ASTMS to get recognition for programming staff at Queen's University, Belfast (CW, November 9), it looks optimistic that a claim for regrading, or the employment of additional control clerk staff at the attached Ashby Institute, will eventually be met.

ASTMS said that it had already managed to gain an extra three days' holiday for technicians and that the university governors had replied on regrading that further enquiries would take place.

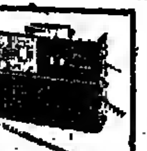
'Breadboarding' show

EVERYTHING but the kitchen sink was on show last week at London's Seymour Hall, for those interested in the dedicated art of "breadboarding" — building up electronic systems from scratch.

Much favoured as a spawning ground for new exhibition ideas, the hall was playing host to another, Breadboard 78.

An Aladdin's cave for all true electronics DIYers, the show attracted a wide range of exhibitors showing everything from components to computers via music synthesisers and hi-fi systems.

Many of the well-known names of the hobby computing business were present, including Nascom Microcomputers with the Nascom 1; the Newsbear Computing Store, with its 77-68 microcomputer and an improved version of the Commodore Kim-1 system, known as Sym-1; the Sintrom Microshop and the Byte Shop, both displaying a wide range of systems and equipment, and Technalogica, again showing its TECS micro-based teletext/viewdata decoder with local computing facilities.



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GEC set for major investment in the automated office

THE agreed takeover of office equipment manufacturer A. B. Dick of Chicago by GEC, due for completion next April (CW, November 23) is the first move in what is likely to be a major investment in office automation and information technology by the British electrical, electronic and telecommunications giant.

GEC is estimated to have current cash balances available for investment of £700 million, so the £53 million it proposes to pay for A. B. Dick will scarcely dent its cash mountain. The £700 million does not include the balance of compensation due to it for nationalisation of the British Aircraft Corp.

GEC seeks a marriage of its own electronic technologies with Dick's duplicators, copiers, word processors and ink-jet printers, and was also particularly attracted by Dick's 68 US offices, which will give it a ready-made US-wide marketing network for office and allied products. Dick forecasts $12.5 million profit in the current year on turnover of some $350 million. With its formidable cash reserves there are plenty of US minicomputer, small business system and peripherals companies of a comparable size which can now be regarded as possible acquisition targets for GEC.

On the minicomputer side, GEC is now bringing GEC Computers out of its shell. The company has added a new compact low-cost version of the 4000 series processor (see page 11), and is beginning a push into the OEM system builders' market which has proved so successful for companies like Honeywell with Level 6 and Univac with the V77.

£50,000 bill for Teesside Poly

SURVIVING a period during which it was in danger of not meeting the workload imposed by the new academic year (CW, September 14), the computer centre at Teesside Polytechnic has now filled many of the vacant job positions and upgraded most of its longer-term staff.

The move is expected to cost about £50,000 a year extra in staff wages. The decision to take on more staff came after it was seen that a new computer system was needed to cope with the rising demand.

A Univac 1110 has now been installed.

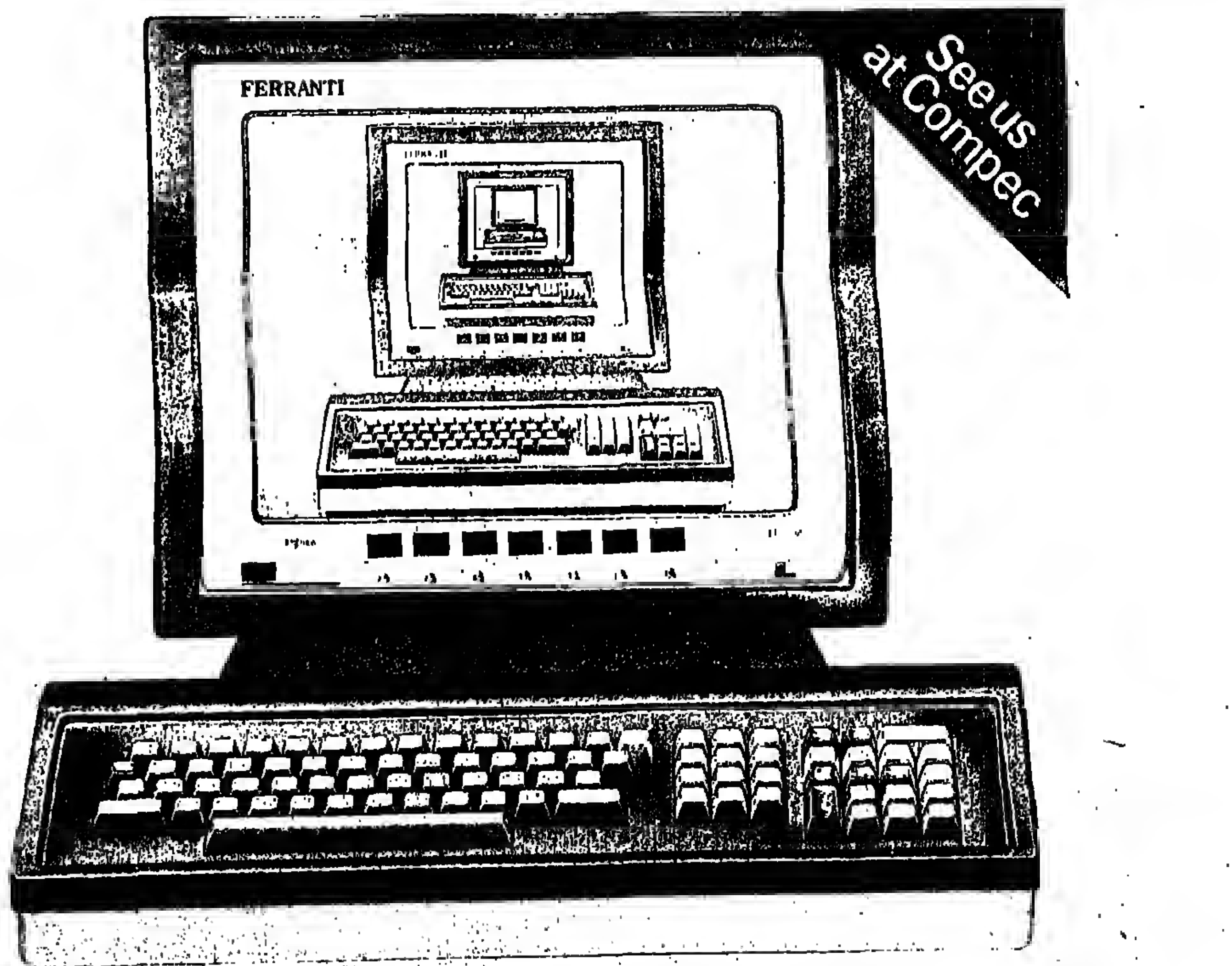
Single chip micro

A SINGLE chip microcomputer is to be introduced next year by National Semiconductor. Known as the 8070 range, the 40-pin device offers 64 bytes of RAM.

Unfair dismissal plea by director

A CAMBRIDGE Computer Services director, Michael Tissier, who was dismissed from the company for alleged misconduct even though he had already given in his notice, is seeking an industrial tribunal settlement in his favour, claiming unfair dismissal.

The first industrial tribunal hearing was on November 14 and the second was planned to take place yesterday (Wednesday).



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Those were the days

FORMER colleagues may scoff, but I felt a twinge of nostalgia at the news that Xerox is closing down its labs in Milton Keynes, after four years spent in the "frozen north" of Buckinghamshire.

The most notable feature of the site was the buildings, if so they can be called. While we were waiting for the vast gleaming complex that never came, the accommodation was all temporary — Portakabins and air houses, air houses being canvas domes held up by air pressure from huge fans.

Some clever dick calculated that these would be cheaper than solid buildings, failing to allow for the fact that they cost vast sums to heat in the winter, and equally vast sums to cool in the summer. (Remember that thing called summer? We had one in 1976.)

The domes acted as greenhouses and got sweltering inside. Obviously you can't cut a hole in the side to put in an ordinary air conditioner, so they had to use these vast heat exchanger things.

There was one of the best canteens there I've known, but since it was in an air house, one's food would get showered with grit when the blower heating was on.

The air house outside our Portakabin was prone to spasmodic collapses. The dome would start to sag, and instantly alarm hooters would scream, a standby diesel blower would start up with a roar, and maintenance staff would come running from all directions. The sagging dome would hang for a while, as the blowers struggled to get the pressure up, and finally we would all cheer as the canvas filled up again.

All good diverting fun.

During a tremendous storm in January, 1976, the two biggest domes were ripped open by the wind. Another, the library, was only just saved, and we had visions, had it opened, of hundreds of Xerox's top secret research reports being blown all over the bleak Bucks countryside, with the industrial spies from neighbouring firms scrabbling in the mud to pick them up.

With the amount of success the lab appears to have had, I fear the reports wouldn't have been much use to them.

Laser Line Printer
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"Don't worry — it only needs a minor adjustment."

Sales sharks?

REPORTS from CDC's recent sales meeting at the Kauai Surf Hotel in Hawaii sound like a script for Jaws III. According to Computer Marketing Newsletter, published in California, the top salesmen at Control Data become members of the Bill Norris Shark Club.

Whether these salesmen devour competitors and swallow unsuspecting customers whole I know not. But whatever the reason for the organisation's name, salesmen are initiated after exceeding sales quotas for three to five years.

Of the 991 salesmen and managers at the conference, 37 Norris Sharks were present. Of these denizens of the DP deeps, only five were selected for membership in the Tiger Shark order. The Tiger Sharks will attend CDC's sales summit conference, to be held in Spain.

Before you let one of the CDC sales force swim into your office, check his wrist. Reportedly, Norris Sharks and the more fearsome Tiger Sharks, wear distinctive Shark Club watches.

It is not known whether these timepieces are waterproof, or if they contain springs.

● We know that software causes the odd problem in the average computer installation, but we were somewhat startled to learn the other day just how bad things actually are. A Press release from Informatics informed us that the company's Mark IV product is "one of the two successful computer software products ever sold"!

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In the period leading up to next week's Compec, the DP Press has its focus more than usually aimed at the products the industry is providing. For many people in DP its technical Press is in fact the main filter through which the activities in the industry are reflected. However, the job of reporting on our expanding, ever changing industry is a difficult one.

In this article, Nicholas Enticknap, who has wide experience of the computer industry as a journalist and computer user, looks behind some popular misconceptions of the role of the Press and outlines what readers should realistically expect from a responsible Press.

What to expect from the computer Press

By Nicholas Enticknap

TO many readers I come in contact with, the Press is a semi-mystical institution with quasi-divine powers, capable of making or marring a company, a product or a career at a single capricious wave of the pen.

The reality is somewhat different. A publication like Computer Weekly is an integral part of the community it serves, and strives to operate in the best interests of that community. Stringent standards are imposed to achieve this.

Nonetheless, the popular view has a considerable impact on the effectiveness of the Press. This means that it is of less value to its readers than it could be.

What is the role of the Press, then? At a simple level, it is a provider of information. We provide news and background information on developments in the industry; we provide descriptions of products and services; we provide information on jobs currently available.

Information, however, is not an absolute commodity. There is a qualitative difference between the kind of information provided in a newspaper and the kind you will find in a directory or an encyclopaedia.

This does not mean that newspapers are less accurate or less reliable, but that their reports have to be seen in a different perspective.

To amplify this, I will define information as facts placed in a context. In an encyclopaedia, the context is painstakingly evaluated by experts over a long period. In a newspaper, the context has to be determined more or less immediately.

It follows that the contextual content of a news story, or even of a magazine article, is much less deep than that of an encyclopaedia entry. Its accuracy and reliability depends on the experience and knowledge of the journalist writing the story, together with the background experience provided for him by his publication.

This is one reason why readers will find that the same story, with essentially the same facts, can read very differently in two publications so apparently similar as Computer Weekly and Computing. But there is another important factor as well — and that is editorial control.

Readers may recall the article discussing the SAS report on DEC's Vax system (CW, November 23) in which the report's author, Henry Norman, questioned the handling of DEC's announcement by the Press. His objection was that the Press had accepted DEC's promotional language without question or check.

No professionally-run publication does this. Journalists always evaluate contexts for themselves. In the case of a product launch, this usually makes a significant difference.

Most equipment suppliers talk about new products in glowing and highly complimentary terms, very reasonably so. If they don't feel enthusiastic about their new widget, it won't be worth producing.

From the objective stance that a journalist has to adopt, however, the significance of a new product is likely to be rather different.

Which is why responsible publications do not reproduce Press releases verbatim. Computer Weekly does not exist in order to promote products, a fact not always appreciated by those new to the industry.

> ***● Computer Weekly does not exist in order to promote products, a fact not always appreciated by those new to the industry. ●***

Interpretation of an announcement is not just a question of context, however. It is also a question of establishing the facts. And, as Henry Norman's report shows, what appears to be a fact may not turn out to be one at all.

This holds good right down to a very basic level. What is a minicomputer, for example? Can the VAX be described as a minicomputer? Does IBM's refusal to admit that the Series 1 is a minicomputer mean that it is not? These are the kind of questions journalists ask themselves when preparing a story.

To the reader this process is, to borrow a piece of computer terminology, transparent. But by assessing the reliability of stories he can check on in the same newspaper over a period of time, he can arrive at an appreciation of the degree of control exercised by that newspaper over its reporting, and so judge its value to him.

There is one other question to be disposed of: it is often thought that, because most UK computer publications are funded entirely from advertising, that these advertisements exert a degree of influence over the content.

Again, no serious publication allows this. In the long term, it is against the advertiser's interests, for it soon becomes obvious and then the readers lose all faith in the integrity of the editorial — which, once lost, is hard to regain. Successful publications of any kind depend on the ability to attract and retain interested readers.

The provision of information is only part of the service the Press provides. Properly, it should be a catalyst for change for the better, and a check on the various forces that exist within the industry. It was this function that the French revolutionaries had in mind when they dubbed the Press "The Fourth Estate."

In this role the Press acts by influencing and concentrating opinion, and so effecting desirable reforms more quickly than they otherwise would.

But there are limits to what can be achieved here.

The Press can create awareness, it can focus opinion, it can suggest solutions. It cannot force its readers to think or do what they don't want to think or do — it can only give a lead.

It is in this respect that the Press is not the force it could be. In particular, computer users are reluctant to talk to the Press, either singly or through representative bodies, and they undoubtedly miss out on publicity value as a result.

It is often said that the computer Press is dominated by equipment suppliers — another reason why readers think that advertising influences editorial content.

In fact, the reason why suppliers receive more than their fair share of editorial space is because they are geared up to achieve this.

Most companies have their own public relations executives who are responsible for ensuring that the Press is informed about their activities. In addition, sales and marketing staff are generally only too happy to spend time talking to the Press.

In contrast, most users are extremely reluctant to talk to the Press, and often will do so only on condition that they can vet the copy. Furthermore, they are more difficult to contact in the first place.

The result is that a story concerning a user takes four or five times as long to research and prepare for publication as a story concerning a supplier.

This is quite explicable; DP managers are busy people, and talking to the Press seems like dereliction of duty when there are so many other urgent matters to be attended to. However they do often miss opportunities to use the Press to help them in the running of their installations.

One example that occurs to me happened a few years ago. A DP manager had had consistent trouble with his tape drives, and was unable, despite meticulous documentation of the problem, to persuade his manufacturer to take any action.

He called me in, gave me his side of the story, complete with proofs, and then invited me to talk to the manufacturer on his premises to hear his side. It made a good story, but before I could get it into print, the manufacturer had identified and rectified the trouble.

This is an example of an individual making use of the service the Press offers. Groups such as user organisations could also make their corporate strength tell to much greater effect by appointing a Press officer to liaise with the various publications.

An example of this in practice was the Data Processing Management Association, now part of the Institute of Data Processing Management. The association appointed a Press officer some three years ago, following which its activities were much more widely publicised. As a result, it steadily increased its influence in the DP community as a whole, as exemplified most notably over the privacy issue.

I believe that the value of a publication to its readership is substantially increased if those readers regard it not as a latter day Moses, handing down the word from on high, but as very much part of their world.

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Leading printer manufacturers may merge

TWO leading printer manufacturers, Tally and the German firm, Mannesmann, look like merging following the acquisition by Mannesmann of the 16% share in Tally held by Pertec. In addition, the litigation between Pertec and Tally that resulted from Pertec's attempts to take over Tally has been settled out of court.

Tally said last week that Mannesmann intended to gain control of Tally and was contemplating making a tender offer for the remaining shares.

Discussions had been going on between the two firms for several weeks about the possibility of Mannesmann acquiring a new issue of Tally stock that could boost its share in Tally from 16% to between 33% and 50%, although late last week Tally said that these talks were not being actively pursued at present.

However, a takeover of Tally by Mannesmann looks likely for several reasons. The two companies' products complement each other fairly neatly in terms of features and performance, and Mannesmann has concentrated almost entirely on the OEM market, while Tally has been stronger in the end-user business.

In addition, the Tally marketing operation in the US could provide the German manufacturer with valuable contracts over there, while Mannesmann could boost Tally sales in Europe. Mannesmann should also be able to work closely with Tally's European factory at Vienna (CW, January 12).

Tally's turnover worldwide is running at about $50 million, while Mannesmann's printer business is now bringing in about $25 million, so a merger would create a printer manufacturer that would probably be second in size only to Dataproducts.

AICS bid to recruit members

SELF-EMPLOYED computer professionals are invited to a special meeting of the Association of Independent Computer Specialists next Wednesday, December 6. It is being held to recruit new members.

The venue is the National Liberal Club in London, and the agenda for the evening, which starts at 6.30pm, will include a rundown on the history of AICS, its current structure and aims, and the benefits it can offer its members.

Membership of AICS costs £40 a year and the benefits include being listed in a handbook sent out once a year to prospective clients.

AICS meets at the Liberal Club on the second Wednesday of every month when the association is usually addressed by a well-known guest speaker. On December 13, at 6.00pm, Kenneth Warren MP will talk about data processing and its social consequences.

The January meeting will feature a demonstration of Prestel by the Post Office.

Inquiries should be made to *AICS headquarters* at Leicester House, 8 Leicester Street, London WC2H 7BN. Tel: 01-437 0878.

Top level fight on ICL pay proposals

AS unions and ICL meet to discuss the finer details of a new productivity scheme (CW, November 23) it already appears that initial company proposals for lump sum payments instead of the previous differential reckoning method, are being strongly opposed by the higher paid members of management. This includes ICL's marketing managers at Slough, who are already in dispute with the company over the terms of relocation expenses following their move from Bracknell (CW, November 16).

This dispute has been handed over to the independent arbitration service ACAS, and may not be dealt with until early next year.

"We are aware that ACAS has a very long queue of references larger or more major than our own," said a spokesman, "but there is no way back on this issue."

Many managers in ICL are worried that the new payments being formulated for the company's self-financing productivity scheme will leave them out of pocket and that lower paid workers will benefit at their expense.

"The company has proposed that lump sums be paid quarterly," said a spokesman for the managers in dispute, "and it appears that the more you earn the less you get."

An example given was that a person earning £10,000 a year would probably get between £1,200 and £1,400 based on performance in the last financial year. This, however, may drop to only £800 if the new proposals are adopted.

"The company has shown that on a pay scale of £4,000 a worker would be paid £100 a quarter, and this would go up in increments per £1,000 of salary until £9,000 is reached when a worker on that scale is paid £160 a quarter. The problem is that the £160 level is the top end of the scale: a manager on £15,000 or £20,000 would still only get £160 a quarter.

"The new scale is based on an average wage of £5,300," said the spokesman, "and while this is good for shop floor workers, it is punitive for managers who typically earn between £8,000 and £15,000.

"Many managers, including those in the manufacturing sector have complained bitterly to the company about this."

Despite this, the feeling among union membership in ICL is that the current proposals are "a foundation for further discussion." A union/company meeting is planned for December 14.

Recruit from Downing Street

Computing has more charms than the exciting world of high level politics for Elsa Landers, who has given up a job at the Prime Minister's political office at 10 Downing Street to join Software Architects. She is the firm's new contracts resources manager, and as she speaks fluent Dutch, German and Spanish will be particularly involved in SAL's increasing European business.

800 'mostly non-DP' jobs to go at Swansea

NON-COMPUTER clerical jobs will account for most of the 800 jobs that will disappear at the Driver and Vehicle Licensing Centre at Swansea over the next few years following the government decision to abolish road fund tax.

The Swansea system is now used primarily for maintaining a central register of vehicles and drivers, an operation that will continue unaffected after car tax is scrapped. By then an additional system will need to be set up for checking on insurance and MoT certificates which is now carried out manually whenever a tax disc is issued.

Plans to use Swansea to issue tax discs to all UK drivers were scrapped about two years ago following which Olivetti A5 office computers were installed at local offices all over the country. About 1,200 jobs will disappear at these offices between now and 1983 when the tax is due to be abolished.

A spokesman for DVLC told Computer Weekly that the ICL System 4 hardware at Swansea will probably be replaced around 1985 but that no decision on what sort of kit that should replace it had been made and that all options were still being considered.

He said the 800 clerical jobs at Swansea would be eliminated by natural wastage, since 800 people left the centre every year.

Project planning guide

A NEW guide designed to help users to plan and control their complex projects has been produced by the National Computing Centre. It is applicable to installation, upgrading or replacement of a computer, the development of new systems and major enhancements to existing systems.

There are many helpful suggestions for managers who want guidelines on how to control and document project progress. Eleven different sample documents are included, with notes defining their purpose, scope and method of use.

The guide, called "Project Planning and Control", is supplied in a ring binder. It is available from the NCC, and costs £25.

On the move

MICROCOMPUTER manufacturer Research Machines has moved to new premises in Oxford, though its PO Box 75, Oxford address, together with telephone numbers, remain unchanged.

Civil servants rebuff MPs over govt handling of ICL

CRITICISM by MPs of the government's handling of ICL and public procurement of 2900 machines, has been rebuffed by civil servants in a Treasury minute, replying to reports from the Commons Committee of Public Accounts.

The Committee had followed the Auditor General's report on ICL by criticising the Central Computer Agency for failing to inform ministers of the likely additional costs of buying 2900s (CW, October 12).

The Treasury and the CCA have replied to the MPs by reiterating the point that forecasting such extra costs involved with untried equipment is difficult.

Regarding the total extra cost to the taxpayer that has been incurred from the government's single tender policy for ICL, the minute says, "Subsequently assessment of the extra costs incurred is complicated by the interaction of any failures on the part of the manufacturer with other factors." These other factors are not specified.

The minute also insists that it is impossible to forecast accurately how soon the government's £40 million loan to ICL will be repaid, owing to the formula which adjusts repayments according to the profits the company makes.

Cyber version of CDC 38500 system

TRILLIONS of bits of data can be held by the the CDC 7880 mass storage system announced by Control Data for users of its Cyber 170, 70 and 6000 series computers. The 7880 is a version of the 38500 mass storage system that Control Data offers to IBM users as an alternative to the IBM 3850. Like the 38500, the 7880 employs tape cartridge that can be moved automatically to a read/write position in a few seconds.

Venture into digital electronics products

A RANGE of digital electronic products is now being sold by a new marketing company, Venture Associates of Otford, Kent. Set up by Alan Hall, former marketing director of ITT Semiconductors, Foots Cray, Ventura is selling on an OEM basis under franchise agreements with the manufacturers concerned.

One of the best known firms is NEC Electronics (Europe), subsidiary of the giant Japanese manufacturer Nippon Electric, whose products include a wide range of microprocessors.

Venture is also selling the optoelectronic devices made by Litronix, including numerous digital displays, and ribbon cables manufactured by the Alpha Wire Corp. The Alpha bonded cables come with up to 30 conductors, while its twisted pair laminated cables can have up to 30 pairs of wires.

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GILB'S MYTHODOLOGY

Has your DBMS saved money?

IT is a long time since I have knocked the DBMS myth in this column, so, knowing it will raise feathers, I'll have another go.

Needless to say, I still haven't found a single clearly documented case anywhere in the world where the database management software was the key to savings or anything else — except unexpected difficulties.

Since then, I have collected a number of cases on the subject which I want to share with you. Following its US study trip, the NCC in its report "DBMS user experience in the USA" said: "Cost benefits were in virtually all cases not quantifiable. We drew a complete blank (on cost justification questions). Implementation costs had in half the systems exceeded benefits."

This correlates nicely with an internal report from one of the oil corporations with many years of both large and small scale DBMS experience, worldwide. Nowhere had it been able to cost justify the use of any of the packages.

Phister, in his incredible collection of hard facts* provides a collection of shocking database economics for various industries. In all cases the cost of the database system grossly exceeded the cost of the previous system.

My favourite case is the California State teachers' system which was ordered dropped by the State Auditors (Astec System) when they discovered that the database gave them $36 cost per transaction as opposed to 50 cents (72 times more costly) without compensating benefits.

How do things get so bad? I know, less than a year ago I asked an eight man project group, which had nearly completed a financial database system, what their cost per transaction goal was.

They had no idea, and thought that maybe the cement company financial controller might have such a number locked in his desk. Included in this case was the amusing situation that they had based their development on a package, which again was based on IBM's IMS.

The performance of this was known to be so poor that the project had concentrated on creating a non-IMS database extract of the IMS database, so that the cost and timing of extracting the company financial data was not too exorbitant.

At an Infotech conference on "IBM — the next five years" in London, Bill O'Connell from Amdahl pointed out that a transaction which took 5,000 instructions in the 1960s required 150,000 with IBM's IMS database system. Progress? I've heard similar numbers about SNA.

The most interesting case added to my collection can be found in the Cincom spring 1976 meeting, describing Rochester NY Telephone Corp's experience with IMS and Total.

Using an IBM 370/155 under IMS, it had heavily loaded the machine with one application and 60 terminals. Instead of going the usual route of people locked into a DBMS, and upgrading its hardware for new applications, it decided in January 1974 to convert the system to use the Total DBMS.

In 1976, without any upgrade of hardware, it reported tripling transaction volume (up to 100,000 per eight-hour shift) and tripling terminal network (190 stations) and IMPROVING overall performance.

It must be a nice thought for all those locked-in IMS users that it *is* possible to escape, if they have the courage to admit that they selected the wrong software, instead of rewarding IBM for their inefficiency by upgrading the hardware (or is it Amdahl who gets the reward for this?). Do any readers feel called upon to share their case studies (anonymity will be granted upon request) of conversions from one DBMS to another? Is there really nobody who dares to publish a set of hard facts showing how the use of a DBMS was a directly profitable decision? There must be an exception to prove every rule.

* Data processing technology and economics, by J. Phister. Box 3642, Santa Monica, California, 90403, USA.

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Fortran 77 compiler available early in 1979 for DEC systems

A FORTRAN 77 compiler which conforms to the full ANSI X3.9-1978 standard, has been developed by HPAC Ltd of Oxford. The software — thought to be the first full Fortran 77 compiler — will be available early next year for the DEC PDP-11 and Computer Automation LSI-2.

HPAC, previously known as Hugh Pushman Associates (Compilers) and best known for its Coral 66 compiler, is also working on three further versions, for release later.

These are thought to be compilers for Computer Automation's Naked Mini 4, the Data General Nova and Interdata 16- and 32-bit processors.

The effective portability of the software comes from the use of a common front-end for all the versions. Written in BCPL, this generates the same intermediate code — an extended O-code — that is used in all HPAC compilers.

One result of this is a high degree of compatibility between the Coral 66 and Fortran processors, which share the same code generator. The languages, for example, can call each other at subroutine level.

On most machines, the code generated by HPAC compilers is rigorously separated into code and data, and is re-entrant at the sub-routine level.

"In practice, the front end is not immutable", commented Peter Burns de Bono, HPAC chairman and managing director. "It is usually adapted to exploit the features of the target machine.

"Our aim is to make user programs portable, not to ensure that our software is portable." Written by Dr Robert Firth, technical director of the firm, the compiler is said to have been designed to be suitable for processing Fortran IV programs in addition to Fortran 77.

All versions will be priced at £2,500.

Package supports word processing on PDP-11

SOFTWARE that supports word processing under RSTS/E on the PDP-11 has come to light following a marketing agreement between the product's US developers and a Bristol based software house.

Called Word-11 the package is thought to be the only proprietary product serving this application on the PDP-11. It is to be sold by Jenson Computer Systems under licence from Data Processing Design, of Los Angeles.

Likely to appeal primarily to those who use a PDP-11 system for data processing, Word-11 allows data to be freely exchanged between word processing and other RSTS applications. It is implemented in re-entrant Macro-11, leading to a relatively low additional overhead per additional concurrent user.

A major feature of the system is that it operates with standard VDUs. By contrast DEC's own system, which is available under the RSX operating system, will run only with intelligent DEC terminals.

Word-11 is sold by the company for £4,000 with an annual maintenance and update charge of £350.

Extended to Assembler and PL/I

PREVIOUSLY restricted to Cobol, the Shadow-Mapgen package for users of Altergo's Shadow II TP monitor has been extended to support Assembler and PL/I as well.

Version 2.1 of the software also allows programmers to generate control streams and source hunks directly, bypassing the generation and compilation of MAPD statements.

Shadow-Mapgen (Software File, May 11) is sold by Adrem Systems & Programming, of Pinner. An aid to the development of VDU maps, it takes as input a deck of 24 80-column cards representing the screen format.

With the latest release, users of all three application languages can create input and output control streams and source books directly from the input cards.

The enhanced package could be of particular interest to PL/I users, according to Adrem. Fast to execute, it is said to outperform techniques using compilers.

The resulting savings in computer time would rapidly outweigh the £500 purchase price, argues the company.

Puzzler

Latest addition to my collection of "true" alphametics is this one in german:

```
 EIN
 EIN
 EIN
 EIN+
----
VIER
```

Does any reader know another in this language? See page 61 for solution.

A love-hate relationship

PROGRAMMING for many is a love-hate (or even hate-hate) relationship, expressed here by programmer John Fisher:

SYSTEM CRAFT

I do not love the machines I have come to work,
 I do not love
The ranked cells of memory, which killed
 the sight of living women
On Taiwan; or the feral speed of the processor,
 the exactness of the order code; I have not
Loved the hord, wide-tied Americana, the
 horrible salesmen, or the sad
Empty programmers. I hate the part
 of me which has this skill,
Cruel, lust-like and masturbatory, solitary and
 proud, For I can curl
My whip and the subroutines dance a jig, the
 data halt, turn and
Wheel, overflow lights flick in time to
 the sour snarl of
My voice; brilliant and autonomous the program
 stands, balanced pulsing
Between my fingers. I hate that skill,
 gorgeous means to send
Whole peoples wandering blankly into mists.

But when to feel the brush of autumn
 leaves round my ankles,
Like bread and cheese, whisky, good
 thought, and all the fruitfulness
Of day, is not enough; and when I
 have rejected the solid
Regard of friends and the excellence of love, and
 ceded in despair the difficult
Objectives of the future; then sovereign in my
 hand, and even in the cold of the deep
Night, indifferent, familiar, quick
 [illegible] clockwork and black-aired,
[illegible] one known kingdom.

SOFT BITS

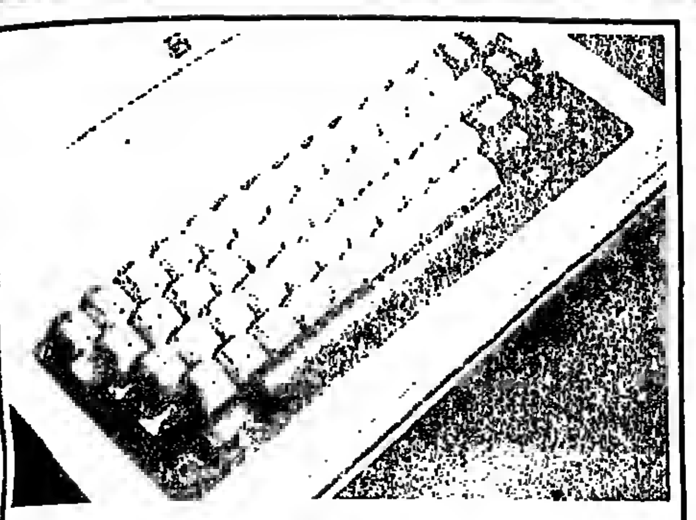
Datamanager for Tesco

MSP's Datamanager data dictionary has been installed by Tesco. It will be used with both IMS and conventional files, initially on a new warehouse stock control system.

PACKAGES for sales, purchase, and nominal ledger processing have been bought by Marks and Spencer from Northern Software Consultants. The software will be run on an ICL 1900 at M&S Baker Street headquarters.

RECENT purchasers of Pulsar Programs: MMS General Ledger and financial reporting system have included three financial organisations: Midland Bank subsidiary Griffin factors, Lloyds and Scottish Finance Group, and Fenla (UK) Ltd.

HARVARD University and Massachusetts Institute of Technology have installed Cullinane's IDMS database management system. Also supplied were the Culprit report generator, On-line Query, Integrated Data Dictionary, and EDP-Auditor.



A lighter touch

ONE of the quietest and lightest APL terminals available is a new version of Texas Instruments' Model 745 from the "Silent 700" range. Switchable between the APL standard Ascii character sets, the terminal has a built-in acoustic coupler, a 5×7 thermal dot matrix printer, and weighs about 13 lbs. Operable at either 10 or 30 characters per second, it is priced at £1,435, exclusive of VAT.

DEC PDP-11 applications packs from Hoskyns

A RANGE of application packages for the DEC PDP-11 has been developed by Hoskyns from the successful mainframe product, Modular Applications Systems. Called MAS-M, the new software runs under RSTS/E and is designed particularly for CTS 500 users.

Although derived from MAS, the new system has been substantially redesigned for interactive operation, according to the company. Implemented in Basic Plus 2, it includes a new TP monitor for the PDP-11, which was developed as part of the project.

Hoskyns has initially released modules for order processing, invoicing, accounts receivable, inventory control, inventory accounting, and general ledger.

Providing for step-by-step implementation, they can be interfaced if required to batch and database versions of MAS running on a mainframe.

Owing to pressure on space, Programmer Notes has been held out this week.

'Full-time standards men wanted,' says Ansi chief

FUNDING for full-time standardisation experts may be the only way to ensure that language standardisation projects keep in step with the natural evolution of a language, according to Frank Engel, who chaired the committee which produced the Ansi Fortran 77 standard.

Speaking to Computer Weekly in London last week, Engel said that the biggest single aid to producing timely and responsive standards would be full-time standardisation committee staff.

Engel, who was for seven years the chairman of the Ansi X3J3 committee that produced Fortran 77, also identified a less democratic mode of operation as a factor that would lead to quicker standardisation.

"For most of the period we were working on the standard, we met for four to five days, every six to eight weeks. But to make any useful contribution, members had also of course to put in time between the meetings.

"In my case, I really wasn't able to do anything else at all. From 1972, I had no financial backing for the standards work and I estimate that it cost me around $200,000. You can't expect people to do it."

Ansi requires all standards to be examined at least every five years. The standard may then be re-affirmed, revised or rescinded.

X3J3 began looking at the previous 1966 standard, shortly after it was published. "We set out just to clarify some of the points that were unclear in the 1966 text," said Engel.

"There was then great resistance to the idea of a major new standard. However by 1969/70 the committee as a whole realised that a revision was desirable not only to clarify these areas but also to make some extensions."

The basis for extending the standard was a review of existing manufacturers' extensions to the language.

"Subsequently, we polled ourselves on the subject of desirable new features. We aimed to have the standard ready in 1971. The deadline slipped to 1972, then by another six months, and another, and we went on thinking it would be complete 'any day now' until we submitted the draft in 1977."

One problem identified by Engel as contributing to the delay was that some decisions would never be accepted as final.

"Issues already decided would be re-opened repeatedly. Often, the original vote would be ratified but sometimes it would be reversed at the last moment."

Engel also said that the ideal of perfectly democratic operation was not, in retrospect, the most appropriate though he would have been uncomfortable in a more autocratic role.

"I didn't feel I had the right to exclude informed people from joining the committee. Although Ansi gives the chairman the power to appoint his own committee, the way we worked was for the whole committee to vote on each candidate.

"I did, though, discourage people from joining in the period up to 1975. Most people — and this was true in my case — join the committee with good local experience of Fortran, but don't in fact know what is in the standard. It usually takes them about two years on the committee to assimilate it."

The attendance requirements — members must be present at two out of three successive meetings to retain voting rights — combined with financial factors to exclude the general public from the committee, Engel noted. Some enthusiastic users, however, did join.

Most members came either from manufacturers or from governments, but this was not an obstacle except inasmuch that they weren't there because of their own interest.

"Most companies see Fortran as a finished product and their representative's purpose as the maintenance of stability. However, no vendor has used the committee to obstruct the language development and there has not even been a hint of one being an obstacle."

The democratic character of the standisation effort is perhaps underlined by the history of Engel's own proposals.

Of five extensions he advocated at the start of the effort — character data type, binary data type, array processing, error control and parallel processing — only the first has merged in the new language standard.

Coral compiler for Cyber

NEWS that Systems Designers has produced a Coral 66 compiler for the IBM 370 has been swiftly followed by the announcement that it is also to implement the portable Coral compiler for Control Data's Cyber 170 range.

The 370 version was produced as a private venture, but the Cyber version will be developed by SDL under contract to Control Data in the UK.

The compiler will run under the network operating system, NOS1, and will be available by next April. It will be marketed and supported by Control Data, with the co-operation of SDL.

Both sets of software will include facilities for Mascot prototyping and are likely to be used extensively as cross-compilers, generating assembler code for a number of different target minicomputers.

No price has been announced for the CDC software but the 370 compiler is sold by SDL on a 20-year licence for £9,500. The Mascot additions are available for a further £2,500.

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OP SPOT

By Bernard Allen

Can ops join IDPM?—a reply to Ted Cluff

ANY self-respecting operator would have been either annoyed or amused (depending on his sense of humour) by some of the comments made by Ted Cluff, secretary-general of the Institute of Data Processing Management, in his letter to Computer Weekly concerning operations staff and IDP membership (CW, November 16).

Spurred into action by an Op Spot piece on the subject, Cluff expressed his "fear" that I do not fully appreciate the Institute's intentions in this regard.

He also stressed that the Institute is interested in the career progression of operations staff and outlined in criteria on which it proposes to select members.

Before considering some of Cluff's comments, let's put the matter in perspective.

Based on a conversation I had with Ted Cluff, I wrote that the average operations person was unlikely to be admitted to the IDPM.

I made this point because, in essence, Cluff said that when assessing applications for membership, the IDPM would consider operations experience in terms both of length of time and of quality.

And his letter does little to alter my view of the matter. In this context, he said:

"The value placed on the credit will be different if gained on a large 370 as distinct from a small System 3. Should the applicant have stayed in operations and reached a position of responsibility, then our evaluation based on years and months X the type of experience may qualify for direct entry to the professional grade."

Does Ted Cluff believe that this will act as an incentive for an operator as he works the night shift, or completes a double-shift stint? Is such a person to think "Oh good, just another two years or so and I'll be able to join the IDPM"?

Seriously, though, this comment by Cluff confirms my point that the typical operations person will not be admitted to the Institute.

Concerning the career progression of operations staff, he says, "We can provide the opportunities. We have a very real interest in the problems of operators. We are especially interested in their career progression."

But operations staff need advice in relation to career progression and help concerning training as soon as they enter the computing industry. Those who have the experience of which Cluff speaks are not in urgent need of advice or help.

He also referred to an IDPM meeting held in May, the theme of which was the relationship between management and operations staff. He said:

"I believe the IDPM has already demonstrated its wish to talk to operators, as witnessed by a recent meeting of our Central London branch, in conjunction with Computer Weekly, especially for operators. It was standing room only."

Yes, as he said, it was "standing room only" at that meeting, but that was due to the number of operations staff who took the trouble to attend. And it was the operators who put forward the most valid arguments, and offered practical suggestions and solutions. It confirmed my view that it is they who provide much of the drive and energy of the industry.

So might I suggest it is the IDPM — and NOT the operators — that has to give evidence of credibility.

Ted Cluff

Career advic

PROMPTED by the desi further her career, a person teaches keyboard skills at in Brighton, writes to Op Sp

"I enjoy the work and like to be involved on a bro scale, but the problem is such positions never seem advertised. What to do?"

A considerable numb computing courses are b Borehamwood College, cluding one on data prepar

Keith Staple, DP man there, says the person con should ring him at 01-953 extension 29.

HINT OF THE WEEK

A program to test for discs under George 2

SEVERAL weeks ago we had a hint proposing a modified version of the ICL mapping utility, XPJO, as a means of ascertaining which discs are online in the George 2 environment.

And this week we have a program which has been "built" for the same purpose. It is sent by Garry Walker, a project leader in the technical support section at the Birmingham site of Triplex Safety Glass.

Says Walker, "It is called #ONOF, and was conceived originally as a George 2 utility to enable a job to test for disc could. If required, be used manually.

"The principle of the progr is that it attempts to open SYFI on the disc. So it has to be trusted and must have 'TRUSTE (8) in the OXPCK steering line'.

The following is a source listing of #ONOF. It is coded in PLAN.

```
#PRO          ONOF
#LOW
MASK          #40000000
PCA           #400/#200,,12HSYFIL     ....
#PRO
#ENT          0          [ENSURE DISCS ONLINE
      STOZ    MASK
#ENT          1          [ENSURE DISCS OFFLINE
      LDN  2  6
#
LOOP  LDX  0  2(2)       [LOAD CSN FROM X1,6,5,4,3
      BZE  0  STEP
#
      LDCT 1  #400       [CONVERT TO # CHAR
      SLL  0  3
      SLC  0  6
      DCH  0  PCA+3(1)   [AND PUT IN PERI CONTROL AREA
      SRL  0  3
      BCHX 1  *-4
#
      PERI 2  PCA        [ATTEMPT TO OPEN
      LDX  0  PCA+1      [TEST REPLY
      ERX  0  MASK
      BNZ  0  RIZZ
#
STEP  BCT  2  LOOP
      DEL     2HNIL
#
RIZZ  DEL     2HZZ
#END
```

At Garry Walker's site, two macros are used to drive #ONOF; one checks which discs are online and the other is to find out which are offline.

He explains, "If file names are duplicated, on special testing for example, it may be essential to ensure that certain discs are online before proceeding with a job."

These two macros are as follows:

1) To ensure that discs are online:

```
MACDEF ONOF/SOFTWARE
IN ED (PROGRAM UTIL)
LOA #ONOF
ALT 3,'%A'-D
ALT 4,'%B'-D
ALT 5,'%C'-D
ENT
AT DEL HH,GOT 8ON
8ONZ HALT 'LOAD %A %B %C
0027'
GOT 8ONZ
8ON LOG
ENDMAC ONOF
```

2) To ensure that discs are offline:

```
MACDEF OFON/SOFTWARE
LOA #ONOF
ALT 3,'%A'-D
ALT 4,'%B'-0
ALT 5,'%C'-0
ENT 1
AT DEL HH,GOT 9OF
9OFZ HALT 'UNLOAD %A %B
0027'
GOT 9OFZ
9OF LOG
ENDMAC OFON
```

Says Walker, "Note the m check for just three discs (th an that all the cartridge numbers will fit into one George halt message).

"However, #ONOF could made parameter-driven and would check for the above any number of discs in one

Garry Walker has also a store-resident utility w same problem in mind. appear in Op Spot next w

Less than 5 weeks to 1979's premier computing event!

THE BRITISH COMPUTER SOCIETY SPECIALIST GROUPS' three day premier event will start 1979 with much to interest both computer specialists and non-specialists.

The Thursday and Friday afternoons and Friday morning sessions will be composed of six different, simultaneous presentations (18 in all). They will feature presentations by speakers eminent in many fields.

The Saturday (6th January 1979) will be an open day designed to attract, inform, and entertain the family. It will include displays by the Computer Arts Society, a microcomputer controlled railway, and many other fascinating exhibits. Information and guidance will be available for young people interested in computing as a career.

Special Rate for Saturday Computing Fun Fair Incl. VAT, £1 for Adults; 50p for Children. (BCS 79 delegates free).

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PROGRAMME DETAILS

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4TH JANUARY
Information Technology — Social Options and Choices
- Dynamic Factors in Microelectronic Advance
- What Kind of Post-Industrial Society Do We Want?
- The Right to Leisure

Working Party Progress on Advanced Programming
- JCL is a Four Letter Word — Something's Missing?
- Tools for Database Administration

Designing Programs for the Real World
- COBOL Program Behaviour
- The Practical Problems of System Development
- Programming Design — The Way Forward

Computer Displays: Devices and Applications
- A Review of New Display Technology for Computer Applications
- Experience with Display Facilities at CEGB National Computer Centre

Information Systems Today and Tomorrow
- Data Analysis for Information System Design
- Intelligent Automatic Information Retrieval
- Dialling for The World's Information

Survey Analysis
- Harvesting the Data
- Choosing a Survey Analysis Package
- Data Structures for Survey Analysis

MORNING FRIDAY 5TH JANUARY
Data Communications — The New Services
- Future U.K. Data Communications Services
- Viewdata

Computers for Development
- Sharing Technology
- Technical Assistance Programmes
- Priorities for Development

Medical Applications of Computers
- The Patient/Computer Interface
- Casualty Records
- Nursing Applications
- Laboratory Systems
- Implementation of Hospital Systems using MUMPS

Why and How of Computer Output Microform
- The COM Industry, its History and Development
- The COM Future from the Computer Professional's Viewpoint
- COM Software and the Host Computer Interface
  - (i) Host Computer Software for Off-Line "Dumb" COM Devices
  - (ii) Mini Software for Off-Line "Intelligent" COM Devices
  - (iii) The New Software Approach to On-Line COM Devices

Machine Translation
- The Renewal of Interest in Machine Translation
- Machine Translation and Human Translation
- Artificial Intelligence and Machine Translation
- Writing Machine Translation Software

Program Construction: An art or a Science?
- Program Language Design to Increase Software Reliability
- 3R — Towards a Common Factor in Programming Notation

AFTERNOON FRIDAY 5TH JANUARY
What is Database?
- Growth of Database
- The Database Approach
- The Database Experience

Computers for the Disabled — The Disabled for Computing
- Viewdata for the Disabled
- Computerised Braille
- Higher Education in Computing for the Disabled

Britain's Objectives in Microelectronics
- A number of authoritative speakers will discuss this increasingly important field.

The Architecture of Performance — Microcode or Hardwire?
- Three mainframe manufacturers have been invited to provide speakers for this session.

Word Processing Today
- An Introduction to Word Processing
- Film: Unilever Unicorn/Logica System Word Processing at Work
- Word Processing — The Way Ahead

Impact of Computers on Urban Planning
- County and District Joint Working in the Planning Area
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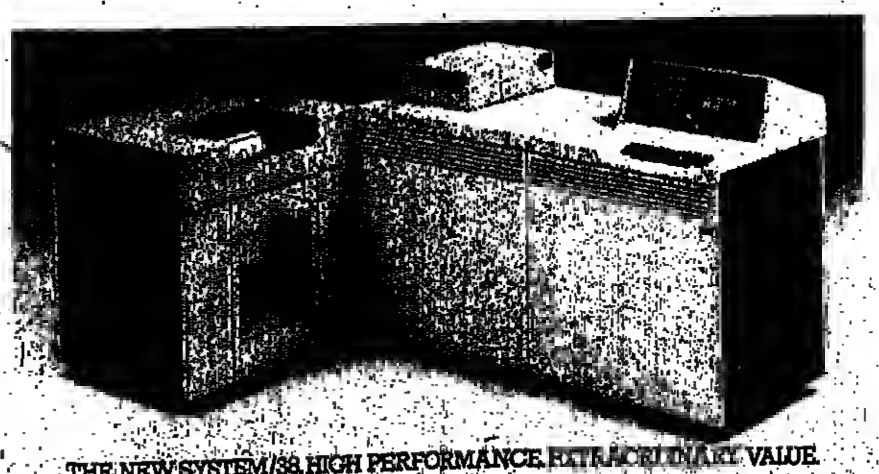

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PEOPLE AND EVENTS

Edited by Nancy Pocock

Control Dataset's managing director

MANAGING director designate of Control Dataset is Terry Cave, who will take up his new position on December 1. Control Dataset is the business products division of Control Data.

Cave was a computer supplies salesman with Precision Data Co, when it was acquired by Control Data in 1970. In 1971 he became sales manager for consumable products (punched cards, printer ribbons, etc) for PDC, then in 1972 was promoted to UK sales manager for all business products.

He was DP marketing manager for the government district from 1974-5, when he took on his current responsibility of regional manager of DP systems sales.

The new position of director of systems and peripheral sales at Control Data is taken by Brian Arnoll, who will retain his responsibility for OEM and peripheral subsystem sales, and add to these the direction of DP systems sales.

Another new CDC post, that of manager, business development, is taken by Alan Weaver, previously manager, financial analysis and planning.

USER GROUPS

ICL Data Entry Users' Group

THE ICL Users' Association for Key Edit Users became the ICL Data Entry Users' Group in 1977, and is divided into a Northern and a Southern Group.

In 1978 it was made a member of the main ICL Computer Users' Association, which is open to mainframe users, and amended its constitution to include users of ICL programmable data entry products, that is, 8950/59 series and 1500 series equipment.

The association welcomes inquiries from users wishing to become members, who should contact the chairman, John Wilcox, at Brook Street Bureau of Mayfair, tel: Portsmouth (0705) 27722.

CIL System 90 Users' Group

THE System 90 Users Group was established in October of this year.

Membership is open to all organisations operating System 90 equipment, whether obtained directly from the manufacturer, Computer Instrumentation Ltd, CIL, or as part of another system.

Users may become members by writing to the secretary and all users are urged to do so, even if they cannot attend meetings, since the bigger the membership, the more power the Group will have to cause improvements to be made.

CIL are being invited to participate by sending a representative to meetings.

Chairman of the Group is Chris Johnson of the Building Research Station, and the secretary is Mike McGuire of British Rail's Research and Development Division.

Correspondence should be sent to Mike McGuire, Room 416, Kelvin House, Railway Technical Centre, London Road, Derby DE2 8UP, which is also the venue for the next meeting on January 24.

Cocks

Tutt

Sullivan

Cairiwell

Michael Cocks of Cincom has been appointed director of European operations, based in Brussels. He is also the first European manager to be appointed to the operating committee. He was previously director of marketing, Europe.

Penny Tutt, marketing executive and company secretary of F International, has been appointed to the company board.

Dave Monk of Texas Instruments' European digital systems division, formerly marketing manager for computer products, has been appointed UK marketing manager for all digital systems products.

Former product marketing engineer **Bill Caldwell** becomes the division's product marketing manager for commercial computer systems; **Harvey Labban** has moved to TI's European HQ in Nice as European product strategy manager for data terminals, and is replaced as product marketing manager for data terminals and peripherals by Bill Sullivan, previously Northern region manager in the Manchester office.

Previously a senior field sales engineer with TI's Slough operation, **Simon Heywood-Jones** becomes UK sales manager for data terminals.

Doug Shephard has joined Redifon Computers as systems analyst for the London branch, from Seiko Time, where he was a programmer. Programmer **Martin Dines** has been promoted from programmer to systems analyst for the South-East branch at Redifon.

Max Edwards has been appointed marketing manager, based in Reading, of Perex, the manufacturing company within the Sintrom group. Until recently he was manager, technical support with DRI. **David Lewis**, previously sales manager for the Western European region with Data Recording Heads, becomes Eastern area sales manager for Sintrom Electronics, based at the London office.

Obituaries

Peter Dann

THE death has occurred of Peter Dann, deputy chairman of Borer Electronics and managing director of Borer Data Systems. He was 45.

Peter Dann acted as the London representative of International Research and Development Co of Newcastle-on-Tyne before joining Borer Electronics in 1973.

In 1974 he became managing director of the latter, and helped set up Borer Data Systems which was created to sell computer-based time recording and security equipment manufactured by the Swiss parent company. He was made managing director of the new company on its opening in August, 1978.

Peter Dann

Alfred Elliot

Alfred Elliot, managing director of Potter Instrument Company and Potter Data Products, died suddenly on November 18 at the age of 53.

After having spent the war years as a rear gunner on Lancaster Bombers, Alf Elliot joined Powers-Samas and became an engineer on the company's punched card equipment. He spent several years with both Powers-Samas and ICT.

He left the computer field for some time, then rejoined it in 1970 when he became spares administrator with Potter Instrument Co.

He subsequently held the positions of stores manager, European spares manager and director, and in 1977 was made managing director.

DIARY

DECEMBER 4
Office computing. BCS E Anglia branch, Electra House, Colchester. 19.00.

DECEMBER 4-8
Datamanager. European conference. European Datamanager User Group. Hotel Norge, Hamburg, Germany.

DECEMBER 5
Philosophy of maintenance in an age of miniaturisation, colloquium. IERE. Royal Institution, London W1. 10.00. Registration necessary, call 01-388 3071 ext 16.

Effective use of minicomputers. Dan Remenyi. BCS NW London branch. Railway Hotel, Greenford, Middx. 19.30.

Personal computing. Bill Cunnings. BCS Harlow sub-branch. Saxon Inn, Harlow, Essex. 19.30.

Social implications of introducing computers into small companies. H. F. Farrow. BCS Leicester branch. James Went Bldg, Leicester Polytechnic. 19.00.

Computer art. John Lansdown. BCS Birmingham branch. Priory Dene Hotel, Edgbaston, Birmingham. 18.30.

Computer typesetting. S. Strudwick. BCS N Staffs branch. Crown Hotel, Stone. 20.00.

Virtual machine environment, a modern operating system. R. Emery. BCS Newcastle-on-Tyne branch. Herras Bridge Bldg, Newcastle University. 19.00.

DECEMBER 5-7
Compec exhibition. [illegible] Promotion. Olympia, London W14.

DECEMBER 6
Computers, the human interface, conference. The Industrial Society, London W1. 9.15. Details Mrs Snell [illegible] ext 280.

Microprocessors in agriculture, colloquium. IEE. Savoy Place, London WC2. 10.30. Register with Secretary [illegible]

Content of general and communication studies in engineering — discussion meeting. P. D. Conway, R. J. Marshall. IEE/IERE. Savoy Place, London WC2. 17.00.

The development and application of large scale integration, discussion meeting. H. J. Pearce, J. P. Pearson. IERE-RAeS. Savoy Place, London WC2. 17.30.

Network world. Dr J. Solomonides. BCS Kingston upon Thames branch. Regional Management Centre, New Malden, Surrey. 19.30.

Presidential visit/Students' evening. BCS Sussex branch. Brighton Polytechnic, Moulsecomb. 19.30.

Programming languages 2. Dr S. [illegible], B. A. Hunt, Polytechnic of Wales. BCS S Wales branch. Polytechnic of Wales, Treforest. 18.15. Details (0443) 405133.

Computer chess. Alex Bell. BCS Humberside branch. Willerby Manor Hotel, Hull. 19.30.

Programs that see. J. M. Brady, Dept of Computer Studies. [illegible] House, Sheffield City Polytechnic. 14.00.

Home brew computing. S. Stevenson. [illegible] BCS Edinburgh branch. Heriot-Watt University, Edinburgh. 17.30.

[illegible] meeting [illegible] Group. University of Kent Computing Lab, Canterbury. [illegible]

DECEMBER 7
Product liability, briefing on the developments. [illegible] Research Group. Royal Lancaster Hotel, London W2. [illegible]

Role of microprocessors [illegible] Dr [illegible] Waterhouse. Institution of [illegible] Engineers. [illegible] London SW1. 17.30.

[illegible] branch. [illegible]

[illegible] Bill Cunnings. BCS W Herts branch. Heath Park Hotel, Hemel Hempstead. 19.30.

Voice response system. [illegible] Hampshire branch. [illegible] Chandlers Ford. 19.00.

Disabled in computing. [illegible] BCS N Wilts branch. [illegible] House, Wootton Bassett, Wilts. 20.00.

Holographic displays colloquium. IEE. Savoy Place, London WC2. Registration necessary, call 01-240 1871 ext 222.

DECEMBER 11
Impact of microprocessors on pattern recognition. British Pattern Recognition Association. University College London. 14.00.

High availability multiprocessor systems, colloquium. IEE. Savoy Place, London WC2. 10.30. Register 01-240 [illegible] 282.

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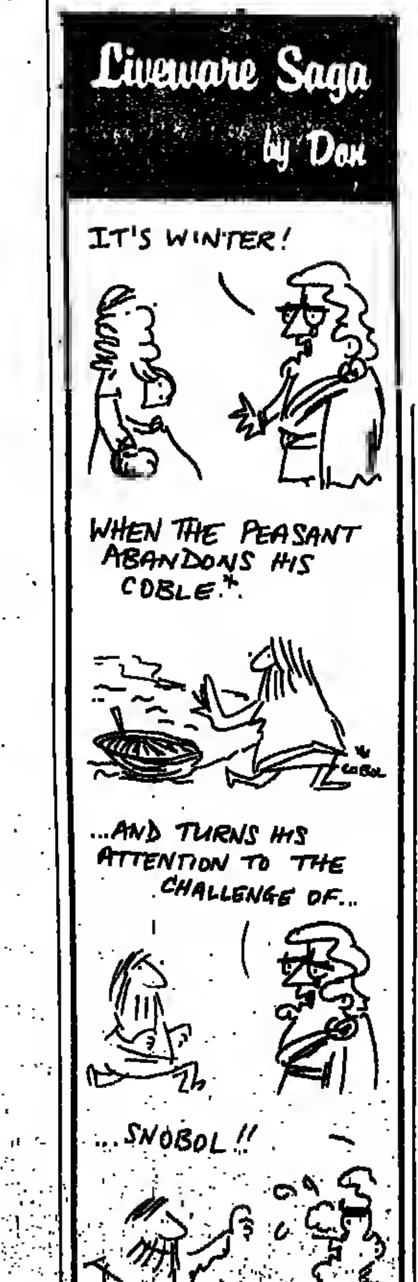
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Cafs for directory inquiries?

THE directory inquiry lady on the left may eventually give up thumbing through over 80 telephone books and switch to operating the VDU pictured on the right if a three-month trial of ICL's Contents Addressable File Store disc sub-system at Post Office exchanges in Leatherhead and Leeds (CW, October 12) proves a success.

Run on an ICL 1803A at Bracknell, the Cafs system enables operators to obtain far quicker replies to directory inquiry interrogations and removes the need for a large amount of shelf storage space for the printed directories.

At present, only about half, or 7.5 million, of the total number of subscribers are listed on disc, and the operators at Leatherhead and Leeds communicate with the 1803A via ICL communications controllers and permanent PO lines.

The trial will cost the Post Office about £1.5 million, and could lead to a nationwide changeover to a Cafs-based inquiry system by 1985 if it proves to work well.

In the meantime, however, the Post Office is to overcome the storage space problem by putting all the printed volumes on to microfiche and operators will use specially designed readers, 5,500 of which have just been ordered from a UK manufacturer.

White House gets a warning about viewdata

From Cameron Davie in Washington

"TELETEXT and viewdata systems represent a clear indication of the technology being ahead of the need," says Charles Ferris, chairman of the US Federal Communications Commission. "Lots of creative things could be done with these systems, but the consumer hasn't even thought of doing them yet."

Addressing a White House Press briefing on information and communications technology issues, Ferris said these computer-based information systems needed careful study by both industry and government to resolve such matters as the impact on the telephone plant, standardisation, who can provide the services, and who should regulate the services.

Speaking for the group that would probably regulate the use of teletext/viewdata systems, Ferris said, "I hope the FCC won't retard development of these efforts." He promised that the Commission would begin now to look into the legal and regulatory ramifications of employing these systems.

The UK has a generally agreed two-year lead in viewdata technology with its Prestel service, and the BBC and ITA have been in the forefront of teletext developments with their Ceefax and Oracle systems.

But in the US a number of companies, including Texas Instruments and telecommunications giant GTE are actively engaged in viewdata experiments, where they will be competing with Prestel, which is being marketed in the US by the National Enterprise Board's Insac company (CW, November 16).

Washington attorney John L. Bartlett recently urged the FCC to initiate an inquiry into the use of teletext systems, but warned the Commission against "putting new services into old regulatory pigeonholes." Under the FCC's existing computer rules, Bartlett pointed out, viewdata could not be provided by AT&T if such systems were deemed data processing.

Existing computer rules also would prohibit the switching of electronic mail between home terminals, the Washington attorney noted.

Home Office lists Met's 'intelligence' system

The existence of the Metropolitan Police's computer system for criminal intelligence has been officially admitted by the Home Office (CW, December 9, 1976). All that Shirley Summerskill, Home Office Under-Secretary, would say about the CTL machine was that it stores indices to crime, criminals, and their associates.

Dr Summerskill was replying in the Commons to Scottish Nationalist MP Douglas Crawford who asked her to list all the police computers in England and Wales.

She also named an experimental system being run jointly by the Home Office and Thames Valley Police to analyse and process records from force "collators". The hardware is from Honeywell.

Also listed were the Police National Computer at Hendon, which consists of twin Burroughs 6800s, and a GEC command and control system used by Suffolk Police.

GEC Computers adds three low-cost machines to 4000 Series

AIMING to double its rate of sales over the next year, GEC Computers has added three completely new low-cost microprogrammed machines to its 4000 Series. The company has also introduced the 4085, a semiconductor memory version of its existing top end system, the 4082.

The three new machines are the 4060 and two associated products, the 4062 and 4065. The three differ only in the amount and type of memory. The 4060 and 4065 have 256K bytes and one Megabyte, respectively, of semiconductor, while the 4062 comes with one Megabyte of mixed semiconductor and core for applications like process control that require the non-volatility of core.

But the essential feature shared by all three machines is the use of the Advanced Micro Devices 2901 bipolar 4-bit slice chip set together with 2,000 words of 64-bit wide microprogrammed PROM to reduce the number of CPU boards to two. This compares with the 15 boards used in the CPU of the top end 4082.

The one big drawback of using microprogramming is that the power of the 4060 machines is significantly lower than the bigger 4000 series machines, being only half that of the 4082.

In employing the AMD 2901 chip set, GEC is following the lead of a big group of US and European computer manufacturers, including Ferranti and Computer Technology, which uses the set in its new 8040 system (CW, October 5).

The three 4060 machines are completely software compatible with the bigger 4000 series computers and come with the OS 4000 transaction oriented operating system and a wide selection of high level languages, including RPG II for business applications. In addition, GEC plans to introduce a Cobol compiler next year and an extended Basic.

Cincom's Total database management system is available now.

- To get 4060 sales off the ground, GEC is offering discounts of between £4,000 and £6,500 to customers who visit its stand at Compec next week and then place an order before March 31 next year. For example, a system with a 102K main memory, two 35 Megabyte disc drives, eight I/O channels, a 300 lpm printer and one VDU will cost £48,000 instead of £54,000. The price includes RPG II and OS 4000 with its program development and batch facilities as well as transaction processing. GEC will demonstrate purchase ledger and insurance packages at Compec and plans to sell the 4060 to customers with commercial applications through specialist systems and software houses. One such firm, Ian Martin Computers Ltd, is developing a library of general purpose packages, including payroll, sales and bought ledger and also software for specific applications in insurance, pharmaceutical wholesaling, civil engineering and contracting.

Managing director of GEC Computers, Alan Fraser, said that sales of 4000 series machines are now running at £1 million a month and that the plan is to double revenues over the next year, and then again in the following year. He added that the staff at the firm's new factory at Dunstable was being expanded from 100 to 300 and that a second factory would soon be opened there.

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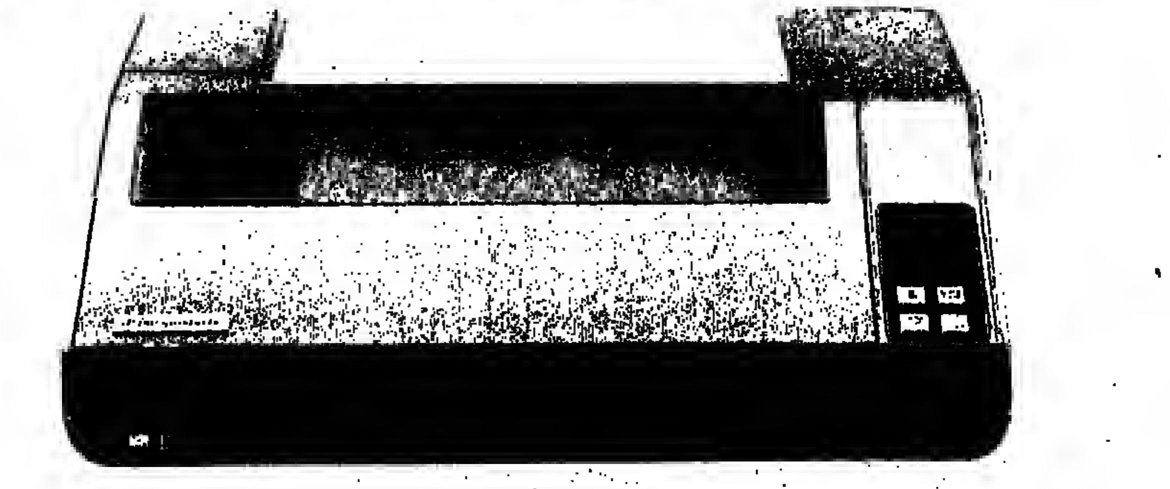

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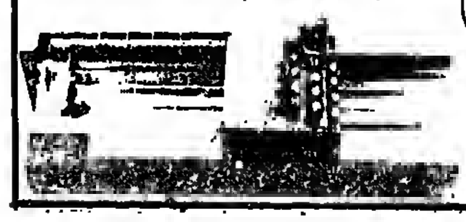

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European Space Agency 2980s pass 504-hour benchmark

TWO years and two months after the contract date, the two ICL 2980s at the European Space Agency establishment in Darmstadt have finally been accepted. ICL will get the contracted price for the machines following settlement of minor contractual issues which should be resolved by the end of the year.

In order to reach this point, the two 2980s had to undergo a continuous 504-hour benchmark of the entire system which ran round the clock for 21 days from September 11 to October 2.

There are three major applications running on the 2980, and all three — sparecraft control, information processing and dissemination, and meteorological analysis — returned availability figures well in excess of those required for acceptance.

Since the benchmark was completed, there has been a nine-day period without a single failure, and all failures which have occurred have been in the hardware, giving the special ESA version of the VME/K operating system a clean bill of health.

"We are now fully satisfied with the 2980s," an ESA spokesman told Computer Weekly. "We do not anticipate any significant changes in the 2980 system, which we expect to continue in service for another four or five years."

All this has not been achieved without enormous effort. "It was more difficult than we expected," said the spokesman, "but because of the efforts of ICL, the software contractors and our own people, we have managed to overcome all the problems."

It was necessary to expand the main memories of the two 2980s from the original 2.5 Megabytes to 3.75 Megabytes each, to get the required performance.

The data being processed comes from the Meteosat weather forecasting satellite, and at present is being treated as test data, although it is passed on to weather forecasting centres in Europe. The plan is for the second flight model of Meteosat to be launched by 1980 on the European Ariane rocket.

Maintenance of micros

THIRD party maintenance for micro systems is following the pattern of the mainframe and terminals markets with the announcement of an agreement between Zilog and Mills Associates to take affect on December 1. Purchasers of Zilog MCZ-1 systems will be offered maintenance contracts with Mills through Zilog or its UK agents: Cramer, Momac and Micropower.

This follows similar agreements made by SWTPC with Computer Field Maintenance and by Computermart with Cable and Wireless covering the Imsai range sold by Computermart.

Demonstrations of Burroughs' specialist processors to begin 'before year end'

MIRABITO ... "large systems a major growth area for the company."

CUSTOMER demonstration of Burroughs' two major specialist processors, the Burroughs Scientific Processor and the Advanced Fortran Processor, will begin before the end of the year, chairman Paul Mirabito told Chicago investment analysts.

He said that the large machines were undergoing final trials at the company's Great Valley, Pennsylvania facility.

The Attached Fortran Processor is a back-end processor for the large-scale B6800 and B7800 mainframes, and Mirabito says that output of these doubled in 1978 over 1977 in terms of units manufactured, and that a substantial further increase will take place next year.

Mirabito told the analysts that Burroughs sees its large systems as a major growth area for the company, but stressed that mid-range systems were proving much more successful than some observers had predicted.

"As far as Burroughs is concerned, we regard medium systems as a growth-oriented part of our total systems capability." He added that "exciting new systems" are on the way in the mid-range 2800-3800-4800 line.

He revealed that the emphasis in research and development is now on software, and noted that the high cost of custom programming was making the use of standard application packages a fast growing business even with top end users.

Research and development expenditure is currently running at $140 million, just under 7% of turnover, and is up 15% over 1977.

Noting that Burroughs had the strongest balance sheet in its history, Mirabito added that it was in a strong position to make acquisitions in the whole field of information management.

The company was close to its target of 20% pre-tax profit on turnover, and planned to double turnover every five years, he said.

How the mini firms fared

A REVIEW of the performance of minicomputer stocks has been published by Evans & Co, the Wall Street stock brokerage firm. Despite the current conditions of the market the review, which covers the first nine months of 1978, shows that investors in many minicomputer manufacturers did well, at least as recently as September 30.

The main % changes in share prices for the first nine months of this year are given in the table below:

Computer Automation	+18.4%
Data General	+21.2%
Digital Equipment	+8.7%
General Automation	+186.4%
Management Assistance	+138.0%
Modular Computer	+56.7%
Prime Computer	+186.0%
Wang Laboratories	+96.3%
Tandem Computers	+93.7%

Handbook for first-timers updated

AIMED at the first-time computer buyer, the First Computer Handbook*, originally published a year ago, is now available in a new edition with an expanded section listing software houses in the business, and suppliers of systems and ancillary equipment.

The Handbook includes sections on sizing a project, investigating feasibility, systems selection and implementation. The latter section covers file conversion, systems test and cut-over. The appendix includes a specimen invitation to tender and checklists of potential benefits, system requirements and implementation activities.

A free 8-page leaflet of checklists is offered separately by the publishers of the Handbook.

*First Computer Handbook – the Management Guide to Buying a Computer, 191pp, £3 from First Computer Handbook Freepost, Whitney on Wye, Hereford HR3 6BR.

E-Series in January

● From front page

Group, in London for ISL's "Towards the Automated Office" seminar at the Cumberland Hotel, also talked to Computer Weekly about the E-Series.

Less precise about the timing of the announcement, though he expected it in the first six weeks of 1979, Kutnick thought that the E-series would not be directly compatible with System 370.

Like Orlansky he expected only some models to be announced initially, and thought they would be mid-range E-Series machines pitched at the 370/135 level.

He also thought that it might well feature minicomputer-type databus architecture rather than traditional mainframe architecture.

About the H-Series successor to the 3030 series large-scale machines, Kutnick had no doubt. "The H-Series will definitely have databus architecture, with several powerful processors dedicated to single functions like file access and communications handling attached to a very fast central bus." In the mainframe world, NCR has pioneered this type of architecture with its Criterion Series.

PO runs out of modems

● From front page

code modulation while achieving the same quality of reproduction.

The TES evaluation is being carried out at the Post Office research centre at Martlesham Heath, Suffolk, and the PO says that it could take up to two years to determine if TES is sufficiently advanced to be used for digitising speech in the proposed System X public telecommunications network.

The man leading the development of TES at Bath, Professor William Gosling of the School of Electronic Engineering, told Computer Weekly that micro-processor-based kit for converting PCM to TES and back again could be inserted into a PCM based network in order to squeeze five or six times as many conversations on to one channel.

Unlike PCM, where the amplitude of a waveform is sampled several times, TES converts the wave shape between each pair of zero points into two numbers, one relating to the time interval and the other to the category that the waveform belongs to.

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LETTERS TO THE EDITOR

Three-part plan for overcoming manpower crisis

THE present serious shortage of manpower in the computer industry is continuously highlighted in your pages by union leaders demanding increased allowances, local government bemoaning its inability to attract suitable staff and micro manufacturers stating that technology is being limited by the non-availability of suitably skilled manpower.

Perhaps the most obvious sign is the increasing size of the job advertisement section. It is a strange comment upon our society when this problem is placed in the context of the present high levels of unemployment.

The most irritating aspect of the present manpower shortage is the apparent inability of the industry to find any positive solutions to the problem, seeking only to treat the symptoms by demanding ever escalating salary levels (which is of course an admirable objective) or complaining about the high cost of agency staff recruited to meet the shortfall.

The next set of symptoms to be treated will, no doubt, be the parasitic denizens of the agency world, with one of the more "nutty" of the extreme political groups descending like avenging angels upon them.

Mind you, it must be *said* that the agencies are in danger of becoming just that, rather than remaining a valuable source of short-term manpower for high priority projects.

The main problems to be faced when seeking a solution to this shortage are, I believe, simply identified:

1. Computer staff are nearly always a part of a small unit attached to a large organisation. This small unit size makes support of effective training programmes difficult;
2. The education system is not at present oriented to the teaching of sciences other than perhaps social sciences;
3. The products of universities are not in the main trained to function in a commercial environment; and;
4. The training boards as at present established are aimed at the functions of industry itself and the interests of the small percentage of computer units are not considered.

I believe that if this problem is to be overcome a three-part strategy is required:

1. pressure must be placed upon the schools and the education authorities to give more importance to the teaching of real sciences and to provide a basic appreciation of the employment opportunities that are available in the high technology areas;
2. effective training courses must be demanded from the further education centres which would fit students for the commercial environment, rather than the present situation where the emphasis is upon such esoteric aspects as linear programming and boolean algebra and the teaching of such quaint languages as Fortran. Instead, syllabuses should reflect such useful topics as Cobol, concepts of program and file design, structured programming and database/communications concepts; and,
3. the final element should be the creation of a body to both co-ordinate and encourage the small fragmented units of our industry to undertake the training of staff rather than to recruit continuously skilled manpower.

There are already two national industry based organisations that are ideally placed to help in this process, but it would appear that neither has the will to do anything useful to overcome the present difficulties.

They are the BCS, which seems to have only one real desire — to become as exclusive and perhaps as useless as many of the other professional institutions, and the NCC, whose main function would appear to be to publicise itself and to talk about what ought to be done while ensuring that it does as little as possible.

If either of these two organisations would take an effective lead in the creation of "computer apprenticeships" and if the government would provide appropriate training grants then, given the high demand that already exists by untrained people to enter the industry, the present manpower shortage could rapidly be resolved.

D. J. COWTAN

Computer Services Officer
Royal Borough of Kensington and Chelsea,
Hornton Street,
London, W8.

Umbrella needed

Perhaps Mr Maddison (Letters, 16th November) should always take his umbrella (80 LET X = ABS (X)).

SID BRYCE

Computer Unit,
Exeter University.

Fourth normal form files

I HAVE been reading the first of Max Stewart's articles (CW, October 26) on relational databases in your 10-week tutorial series. In two of these articles, you refer to relational files as "fourth normal form" files.

I have previously come across several other sources of material on relational files and, in all of these, the files are referred to as "third normal form".

I would be grateful if you could explain to me what fourth normal form is and/or its difference from third normal form.

I would like to add that I find your articles easy to read and comprehend: which is more than I can say for some of the other articles I have read on the subject.

R. DALE

Caddington,
Bedfordshire.

MAX STEWART replies: Fourth normal form superseded third normal form as an ideal file structure in 1976. The difference between the two is discussed in Part 9 of the series.

15 years' non-stop service

IT MAY be of interest to some of your readers to know that the English Electric KDF6 and KDN2/6 computers along with eight 1081 magnetic tape decks and a 1040 line printer at BSC Rotherham Works, Aldwarke General Offices, were finally closed down in mid-October and taken off-site on Tuesday, November 16, 1978. They had given almost 15 years of continuous 24 hour seven days a week service. There are still two KDN2s and one KDF6 working on the Aldwarke site in the Primary Rolling Mill, and to my knowledge they are the last of these second generation machines.

V. R. G. SIDDONS
Area Supervisor
Sheffield

GEC-Elliott Process Automation

Private Eyeful?

WARREN

The snide story by your columnist Ched about my business interests regrettably fails to say that I told one of your reporters, among others, the facts you now quote against me.

If you want to be the Private Eye of the computer world please remember next time that as a director of the company you mention I have never received any remuneration or expenses of any kind from that company, or any of its clients. Obviously I am a failed philanthropist.

KENNETH WARREN, MP
Goudhurst,
Kent.

KENNETH Warren did not reveal to one of our reporters the fact that he is associated with the public relations firm handling OCR Scandata — Editor.

Sharing some of the limelight

I READ with interest the article entitled "Oiling of distributor's net" by Ruth Stein and, in order to keep the record straight, I would like to point out to you that some parts of the article are incorrect.

In 1975 we allowed Computer Design Systems to produce a system for us, the specification of which was provided by the National Computing Centre.

At a later date we introduced CDS to Shell following a telephone call to one of their distributors who, together with other oil companies of my acquaintance, attended an exhibition at the Arndale Centre, Manchester.

The program then available was demonstrated by our own operator, Mrs J. Worthington.

We feel that following the success of this system and the use of it by Shell, we would like to share in a little of the limelight.

Correspondence confirming the above is available.

A. KREIKE

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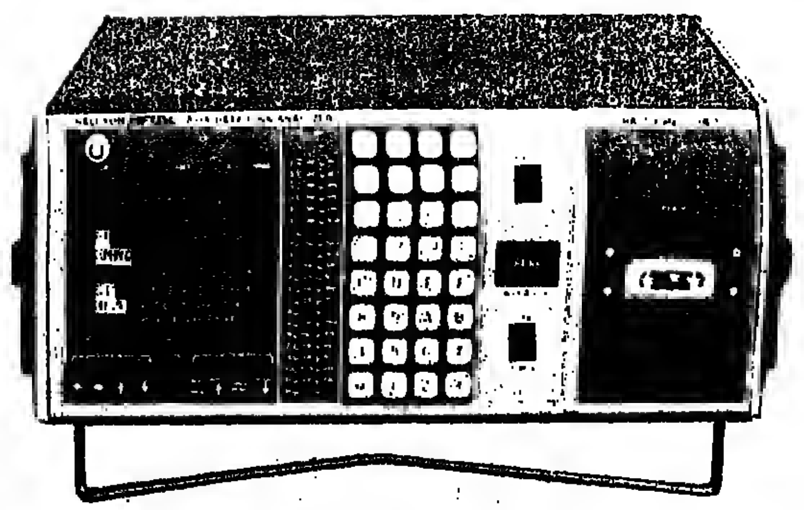
Manchester.



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Participative systems design

PART 4 OF A SERIES BY
ENID MUMFORD, FRANK
LAND AND JOHN HAWGOOD

Aim is to improve the relationship between individual and his work

A technique of participative systems design has been created by three specialists in computers and systems management, following recent criticisms that systems designers have failed to include the views of all users in their design specifications. This is fourth article in a series of five by the three specialists: Enid Mumford, of the Manchester Business School; Frank Land, senior lecturer in computers and systems analysis at the London School of Economics; and John Hawgood, director of the computer laboratory at Durham University.

A PARTICIPATIVE approach to systems design means that the employees of a department or their representatives, as part of the design process for a new computer application, construct a new form of work organisation which is based on a diagnosis by them of their own needs.

There are a number of philosophical approaches to work design which such design groups may want to consider.

The two most frequently used are job enrichment and the socio-technical approach. Job enrichment focuses on the job of the individual worker and tries to build up his job in such a way that it increases in interest, responsibility and challenge.

The job may be extended by adding to it preliminary activities such as setting it up and acquiring the necessary materials, or completion activities such as final quality inspection and the rectification of errors, tasks which previously have been carried out by other individuals.

The aim of job enrichment is to improve the relationship between the individual and his work.

The socio-technical method was originally developed by the Tavistock Institute in London and this takes a very different approach. The concept of a socio-technical system is derived from the premise that any production system requires both a technology, a process of transforming raw materials into output, and a social structure linking the human operators both with the technology and with each other.

A socio-technical system is any unit in the organisation composed of a technological and a social sub-system having a common task or goal to accomplish.

If we are concerned with clerical systems based on the use of a computer the technical system will consist of the tools, techniques and procedures used for processing the raw material of information.

The social structure is the network of roles, relationships and tasks which interact with the technical system. The purpose of the socio-technical systems approach is to produce technical and social structures which have a high capacity to achieve technical and social goals and which reinforce each other in the achievement of these goals. The socio-technical approach aims to improve the relationship between the group and its work.

Socio-technical analysis incorporates a logical analysis of the technical components of the work system (machines, procedures, information) and the grouping of them into "unit operations."

Unit operations are logically integrated sets of tasks, one set being separated from the next by a change of state in the input or product.

For example, in a purchase department the tasks of preparing accounts data for a computer, putting the data into the computer and correcting errors is a logically different set of activities from matching accounts with goods received notes and investigating discrepancies.

Work design which uses a socio-technical approach identifies unit operations and allocates one or a number of these, depending on their scope and complexity, to each work group.

In this way the group receives a meaningful set of tasks which makes a substantial contribution to the development of a product or provision of a service.

The work group then has the responsibility for allocating tasks among its members and for training its members so that eventually each individual is competent to carry out all tasks.

This approach is in marked contrast to the functional philosophy found in many firms, in which work is split into a number of small tasks; each employee being allocated one task only.

The analysis of the social part of the work system consists of analysing the role relationships within the system, in other words establishing who needs to work with whom for the system to function efficiently. In addition an analysis is made of the job satisfaction needs of individuals in the department, using the theoretical framework described in an earlier article.

An important aspect of the socio-technical approach is the notion of "control." A further analysis of the technical part of the system is carried out using the "variance analysis" technique which identifies parts of the system where problems tend to occur because there is difficulty in achieving desired standards or norms. These problems are due to systems weaknesses rather than human errors.

Operating efficiency is then improved by giving each work group the responsibility for eliminating and correcting variances which occur within the set of unit operations for which it is responsible.

Job satisfaction is also improved through handing over this control function to the group as the prevention or correction of problems usually requires intelligence and initiative.

The group requires a set of problem solving skills to enable them to handle variances successfully and the acquisition of these involves an enhancement of the knowledge of individual group members. It is believed that responsibility for, and ability to solve problems increases the interest of work and provides a sense of achievement.

Any design group, and the professional systems analysts in it, requires a knowledge of these two approaches to work design once they begin working out the structure of the new system.

This is best given through a formal course or set of exercises as it is not easy for a group to pick up for itself. There is now an extensive literature on work design which can provide the basis for such a course.

In the engineering firm which collaborated in the most recent use of our participative approach the design group evolved three alternative socio-technical strategies.

The first of these was to split the user department into a number of multi-skilled, autonomous groups with each group looking after the accounts of a number of customers, using a video terminal to input accounts data and obtain customer information.

A second, more conservative alternative, focussed on enriching the more routine jobs in the department.

The third alternative, and the one finally chosen, was a compromise between the first two.

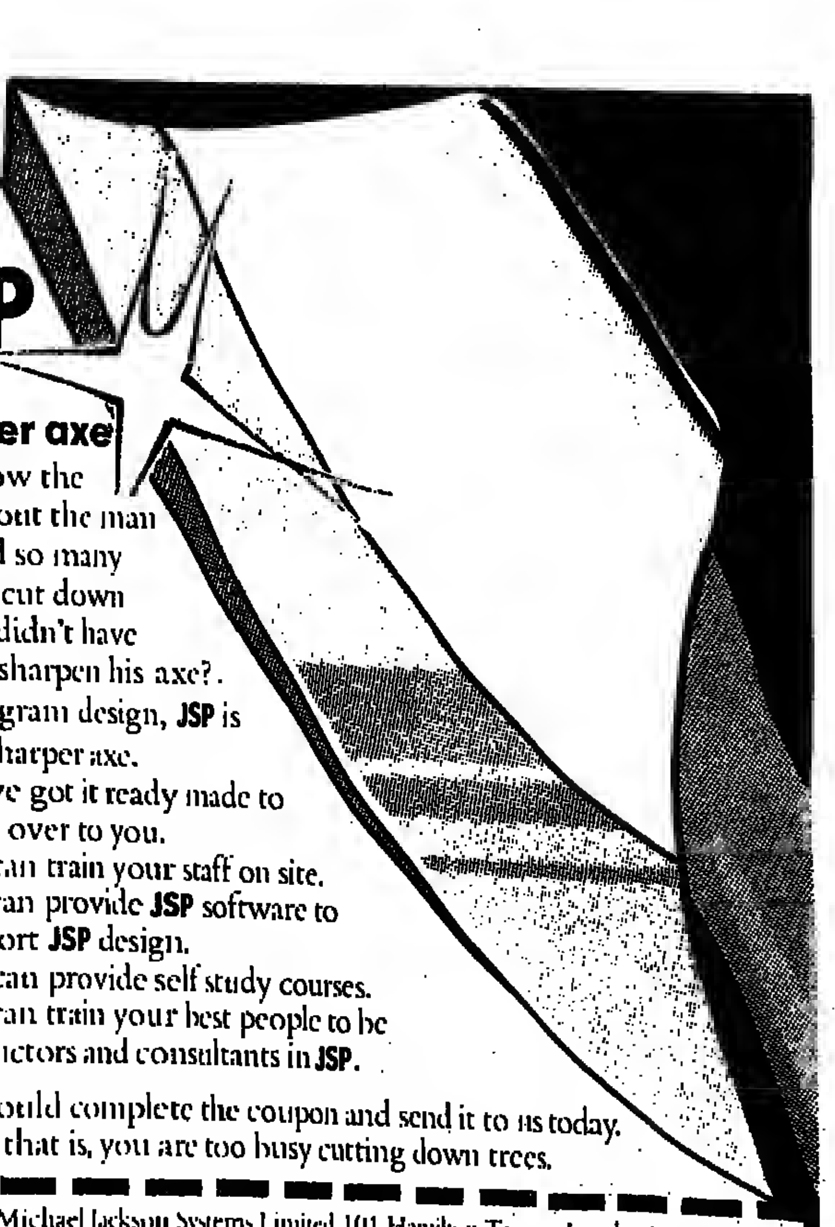
The majority of clerks in the department were to be organised into autonomous groups and provided with the opportunity of increasing their grade and salary as they became expert in all the tasks for which the group was responsible.

A small specialist group would be created to meet the needs of a number of senior clerks who thought that joining an autonomous group would reduce their status.

In addition a service group would be created with responsibility for a number of routine tasks such as photo copying, filing and handling the mail. The service group was a response to the request of a number of older clerks who said they wished to do routine work and did not want the stress of acquiring new skills.

These three strategies were discussed with all clerks in the user department at a meeting chaired by the senior trade union official and the third alternative was accepted on a show of hands.

It must be emphasised here that the design group had previously discussed all three strategies in detail with senior and line management and management had indicated that any of the three would be acceptable from management's point of view.



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SOS the key, says Univac

BELIEVING that silicon-on-sapphire, SOS, technology provides the key to very large-scale integration, Univac is working on circuits for its own use with a channel length of seven microns. Univac is also buying 100 256K-bit bubble memories from Texas Instruments and Rockwell for use in military computer peripherals. When TI was the only source of bubble memories, Univac considered making its own (CW, June 18), but Rockwell's appearance on the market is likely to eliminate the need for this.

VAX-11/780s at heart of Austrian radar system

ONE of the first major applications of the powerful Digital Equipment VAX-11/780 is to be in a radar and flight data processing system being built by Plessey Radar for the Austrian Federal Office for Civil Aviation.

The system being built by Plessey, under a £9 million contract, will have six VAX-11/780s at the heart of it, surrounded by a network of 28 PDP-11/34 minis. The requirements of ultra reliability in air traffic control applications dictate that the two central systems, one handling radar tracking and the other handling flight data processing, must be triplicated. The systems will therefore each consist of three VSX-11 processors.

NEWS IN BRIEF

Lomac files $250,000 suit

A US manufacturer of computer-based process control equipment for semiconductor firms, Lomac Corp, has filed a $250,000 suit to prevent Logical Machine Corp using "Lomac" as its corporate name in the media.

Logical Machine Corp, which builds the "no software" Adam system, says that it has stopped referring to itself as Lomac and hopes to settle the matter out of court.

Terminated

MANUFACTURE and marketing of the 200 cps Centronics Model 765 teleprinter has been terminated by the company only a few weeks after the announcement of the product. Centronics said that the marketing strategy behind the 765 was wrong. No 765 deliveries have been made by Centronics in the UK.

Micro range

LUTON-BASED computer firm Usher-Woods is to market a new range of microcomputer systems manufactured by [illegible] Spencley of Royston. The systems come completely packaged with all hardware and software required for a range of applications. Typical cost of a system is £6,000.

Double density

AN IBM compatible disc drive that can store 635 Megabytes per spindle — twice the capacity of the IBM 3350 — has been announced by Storage Technology. Called the STC 8650 the new drive offers twice the track density of the existing STC 8350 and employs a new head [illegible] and a new servo system that improve read/write reliability and minimise seek time.

Birmingham office

TO handle its centralised system maintenance services, BTI Computer Services (UK) of Slough, the UK operation of the US based timesharing computer systems manufacturer, has opened a new office in Birmingham. It is the first additional office BTI has acquired in this country and it will house two BTI 4000 systems, and a BTI 5000.

Boiler design

INDUSTRIAL boiler design calculations previously performed on timesharing bureau machines will now be done in house at NEI International Combustion on its new 256K Prime 400. NEI has written its own design software to run on the system, which has six interactive terminals, a remote batch terminal and a job entry terminal with a 600 lpm printer and card and tape peripherals.

Premier grows

LEASING company, Premier Computers, has increased the size of its worldwide portfolio by about 50% by acquiring the UK portfolio of the US based banking group, Citibank. The portfolio comprises mainly IBM 370 machines installed with 14 big users in the UK, and is worth $16 million at current IBM purchase prices.

One-day shows

A SERIES of one-day exhibitions presenting a variety of UK computer, peripheral and software companies is to be held at the Institute of Directors in London next year. The ten shows, one a month from January to November, excluding August, will be organised by Computrade of Leatherhead, Surrey, and each is limited to 20 exhibitors.

MICRO NEWS **Edited by Martin Banks**

Micro sales up 12-fold by 1986—Pactel

A BIG jump in microcomputer sales, from $69 million, to $832 million, or 12 times more, by 1986, is predicted in a new report on the microcomputer. Published by Pactel at $995 a copy, it is called The Microcomputer Marketplace in Western Europe, 1978-1986, and is pitched primarily at the semiconductor manufacturer, providing data on the total size of the micro market in Western Europe, with percentage splits within that market, through to 1986.

One of the Pactel Market Series reports, from the company's Product and Market Planning Division, it should be noted that its prediction of an $832 million market in eight years' time is based on fixed 1977 prices.

The report is disappointing in that little effort seems to have been made to look beyond the semiconductor manufacturers' own end-user market — the OEMs and equipment manufacturers — to examine the potential of the ultimate end-user marketplaces.

Mike Robson, who was responsible for the preparation of the report, confined himself at the launch last week to the prediction that "the ultimate end-user market would be many times greater in value than these microcomputer market figures."

He suggested that one of the most significant developments of the near future would be the results of the government's efforts to promote the use of microprocessors and microcomputer systems in industry.

Statistics have shown that the government has an uphill struggle in this task, with only 50 per cent of British industry estimated as being aware of the devices, and only 2 per cent of that 50 per cent actually applying them.

The potential of this government promotional effort could have been greatly enhanced if a report such as this, coming at this time, had shown British and European industry (as micro-computer users) the potential returns on an investment in micro applications.

For, as Robson said last week, "user opportunities in the UK are now enormous, there is a tremendous opportunity to create new products and new jobs." He reiterated the oft-quoted opinion that many more jobs would be lost by not developing micro applications in the UK, through competition from other countries that did, than would be lost by "job replacement" by automation.

The figures the Pactel report presents to the semiconductor industry about the European market are nonetheless interesting.

The report predicts a big jump in microcomputer sales in 1980 as products currently in development reach production volumes. The 1977 "consumption" was $69 million, while 1981 will see it rise to over $297 million. The 1986 market estimate is $832 million. These figures are, however, at fixed 1977 prices, so account has to be taken of the continuing downward price trend in microelectronics.

The 1986 figure takes into account the application of devices that have yet to be developed, but will be in volume production by that time. It is difficult to see how a 1977 price can be placed on such devices, though Robson says that such a quantification can be made.

In terms of market dominance, the report gives figures to show that Intel, with 52 per cent of the European market in 1977, is by far the biggest company, followed by Motorola and Texas Instruments with 11 per cent each, Rockwell 9 per cent, Fairchild 5 per cent, National Semiconductor 4 per cent, Zilog 2% and the rest 6%.

Plan to aid the disabled

THE Seagraves of Ruislip are pictured outside the offices of hobby computer magazine Practical Computing, with their prize of an Apple II computer. Behind them is Mike Sterland, Apple distributor of Personal Computers, which sponsored the magazine's recent competition on the best ways to use a small computer.

The Seagraves' winning entry is a plan to help rehabilitate handicapped people into society. Basing the application on the known needs of two spastic teenagers, their plan is to develop a program by which handicapped users can write with the aid of a blow-pipe, joystick or any other kind of switch that can be adapted to suit the degree of handicap.

Two Mbit RAMs planned in $200m programme

A $200 MILLION, six-year development programme is being planned by the US Department of Defence. It is seeking to produce two Megabit RAMs, bipolar circuits with 30,000 gates to a chip and a 200MHz clock rate, and NMOS circuits with 150,000 gates and 30MHz clock rates.

Although the full budget has still to be approved, some $18 million has already been committed to the programme for next year.

The aim is to develop a new generation of Very High Speed Integration (VHSI) semiconductors for military applications. They could be 100 times faster than current devices.

All of the three main services of the US armed forces will be participating in the programme.

So far, the US Navy has been given responsibility for developing electron-beam lithography, with the intention of getting line widths down to 1.25 microns, initially. The ultimate goal is to attain sub-micron line width geometries. It is hoped that such a high density device will be available within three years.

Add-on peripherals expand the Commodore Pet

THREE more manufacturers are jumping on the Commodore Pet bandwagon by introducing add-on peripherals and systems that greatly expand the capabilities of the machine. The add-ons provide a main memory extension, a floppy disc system and a low-cost, business quality "IBM" printer.

Perhaps the most unusual of the three is the floppy disc system, from Midland Micronics of Solihull. Its MM3 system provides a data transfer rate between the Pet and the storage medium that is claimed to be 1,000 times faster than the machine's internal cassette equipment.

A twin mini-floppy disc system, it is housed in a "saddle" casing that fits over the top of the Pet display screen housing, so that there is one drive mounted on either side of the screen. A stand-alone single disc system is also available.

Both come supplied with a PROM containing the disc operating system.

The "IBM" printer comes from Pet distributor GR Electronics. Based on the IBM 3982 Golfball unit, it provides a full Ascii character set and has the standard golfball feature of interchangeable typefaces.

Called the Petprint 3982, it has a print speed of 15 characters per second and a line length of 130 characters. It is driven from the Pet user port rather than the IEEE standard interface, and requires a less than 256 byte operating program, which is available on cassette.

Last but not least among the add-ons is the Petite, from Plessey Microsystems. This is a self-contained RAM module that expands the Pet main memory capacity from between 8K bytes and 32K bytes. It interfaces with the Pet memory port.

The standard version, which has a current price tag of £449, is a 24K byte unit.

Some of the companies who have IBM Mainframes.

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THE RANK ORGANISATION
3M U.K. LIMITED
THE STANDARD LIFE ASSURANCE CO.
THE WORCESTER VALVE CO.
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It's hardly news that some of Britain's best-known companies use the biggest supplier of mainframes.

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RELATIONAL DATABASES

Part 6 of a series by Max Stewart, divisional technical support manager, Leyland Vehicles

Relationships between files. The application of relational database techniques both to conventional file design and to database design for a relational database management system frequently leads to the creation of a substantial number of simple files. Conventional files can be related using a cross-index; some relational database management systems provide a similar but more comprehensive feature called joining. The principles of cross-indexing and joining are the same: two files are related using a common data item (or combination of items). This data item is often the key of one of the files and part of a concatenated key in the other file. Here are two examples.

In Part 4, Figure 2, ITEM is the key for File a and part of the key for File c. File a and File c can thus be related on the values of ITEM.

In the school examinations example given in Part 4, the Pupil file is related to the Mark file on PUPIL; the Subject file is related to the Mark file on SUBJECT. There is thus a collection of data which relates Pupil and Subject — the Mark records. Such data are called *intersection* data. If the relationship between two files is n-to-n (eg Pupil to Subject) but no intersection data exist, it is necessary either to create a dummy file which contains only a concatenated key (e.g. PUPIL, SUBJECT but nothing else), or for the database management system to provide multiple value fields. The provision of such fields allows the database management system to support n-to-n relationships directly without the need for empty logical children (IMS) or dummy intersection record types (IDMS, IDS, SIBAS and other Codasyl-like systems). Adabas, for example, provides full support (including indexing and file joining) for multiple value fields.

Multiple value fields may or may not be necessary for file joining:

1-to-1 relationships. If the data items used for joining the two files are related 1-to-1, neither item will have a multiple value.

1-to-n and n-to-1 relationships. In Figures 3 and 4, one chief has many indians but each indian has only one chief. The relationship diagram is:

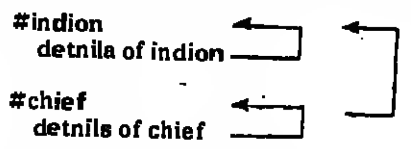

Figure 1

In Figure 3, the two files are joined on # indian, where each value is unique to a particular indian. This entails having a multiple value data item of # indian in the chiefs' file.

In Figure 4, the two files are joined on # chief, where each value is unique to a particular chief; no multiple value occurs.

In a 1-to-n or n-to-1 relationship, the joining data item should normally be a key for records on the "1" side rather than the "n" side. This means that the data item also appears in records on the "n" side but not as a key (as defined in Part 2).

Note that a file which has records with a multiple value key cannot be in fourth normal form unless one of the values (eg the first in each record) or a concatenation of all the values is designated the prime key.

n-to-n relationships. If the key data items are in an n-to-n relationship, the common data item will normally have a multiple value in one file or the other.

An example is given in Figure 5. If a number of pupils sit a particular examination, and any one pupil can sit several examinations, the pupil and examination files can be joined on either #pupil (where each value is unique to a particular pupil) or #exam (where each value is unique to a particular examination). The relationship diagram is:

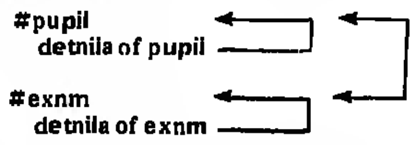

Figure 2

If the files are joined on # pupil (Figure 6), each examination record should contain (in addition to # exam) a multiple value of # pupil with one value for each pupil who sits that examination.

If, instead, the files are joined on # exam (Figure 8) each pupil record should contain (in addition to # pupil) a multiple value field of # exam with one value for each examination taken by that pupil.

Note that even with this n-to-n relationship it is not mandatory to use a multiple value joining data item in one file or the other, and there are cases where a multiple value cannot be used. If any one examination could be entered by a larger number of pupils than any multiple value field implementation limit, the examination file can be decomposed into two files (Figure 7): a relationships file with one record for each ♯ exam ♯ pupil combination (i.e. dummy intersection data); and a details file for each examination.

If the examination details were short, the details could be repeated in each relationship record, and the examination details file dispensed with. Such a file is far removed from fourth normal form — it would actually be in first normal form only.

Other Mechanisms. Other relational database management systems determine the relationship between records in two files dynamically (when a query is posed for example). This often entails a serial search through one of the files. If a record in File A is selected using some search criterion, the related record or records in File B will be found by searching file B.

Summary. This part and Part 5 have covered the implementation of FNF files in a conventional file handling system and in relational database management systems. The next article will discuss implementation in hierarchical and Codasyl-type systems.

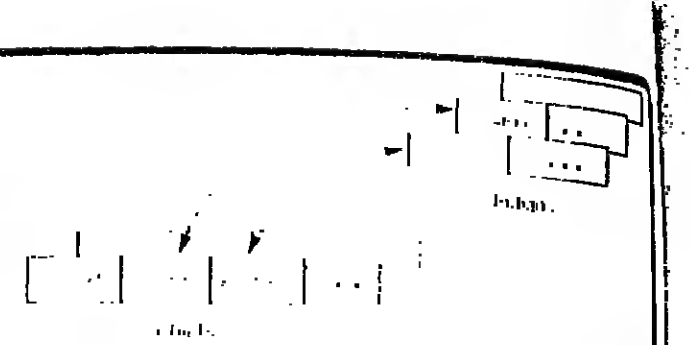

Figure 3

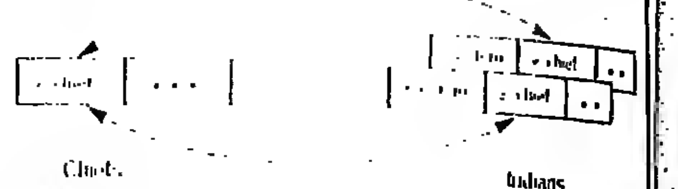

Figure 4

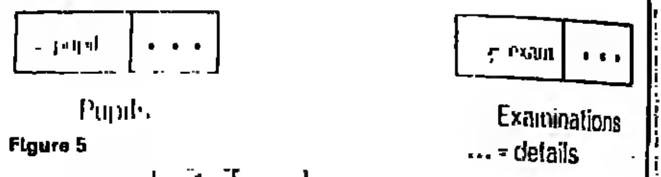

Figure 5

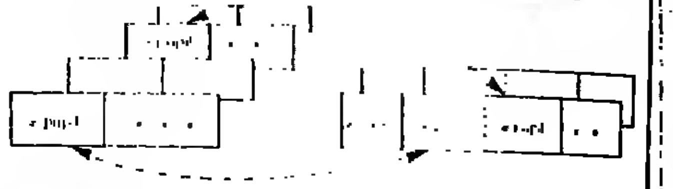

Figure 6

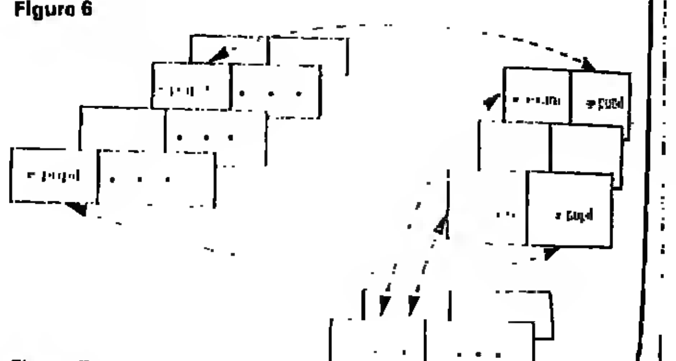

Figure 7

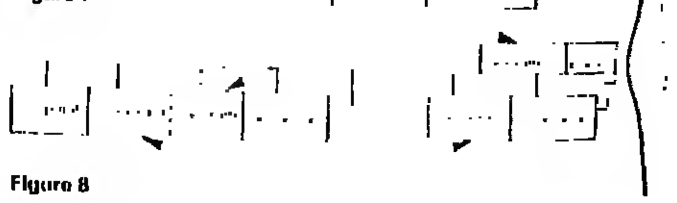

Figure 8

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EDUCATION AND TRAINING

'There's not enough of it about!'

Students on a BOC Datasolve training course look at a closed-circuit TV recording of one of their own tutorials.

The key to the future impact of information technology on society will be the capability of the educational and training system to provide sufficient numbers of people with the skills to use the technology effectively and to create a wider and more informed public awareness of the true potential — and dangers — of that technology.

This supplement on education and training examines some of the practical work currently being implemented to help create the necessary technical, managerial and user resources.

The introductory article on this page examines one of the most urgent requirements — the need to produce an adequate supply of computing personpower. Don Yeates, pictured above, left head of education at BOC Datasolve and former head of systems and programming and schools education for the National Computing Centre, suggests some ways of tackling this problem. Yeates has served on a number of national bodies concerned with computer education and training, including the joint Business Education Council/Technical Education Council committee.

IF the title of this article has intrigued you sufficiently to read this far, let me say straight away that if you're not getting your share, it's probably your own fault!

What I'm referring to is, of course, your share of the skilled computer man and woman-power you need to ensure successful computing development within your organisation.

The purpose of this article is to encourage you to do something about it, by exposing other people's good ideas to see if they could help you.

Firstly, let's get to grips with the national scene if we can. I make no apologies for not beginning with statistics. As Disraeli said: "There are lies, damned lies and statistics" and this more or less reflects the current state of ignorance.

There are, however, two national schemes contributing to the supply of well trained junior computer staff. These are Threshold and Tops, both sponsored by the Manpower Services Commission.

The Threshold scheme is mainly intended for school-leavers and all students must be over 16 and not yet 20. They must also be unemployed or in a non-career job. The scheme is administered by the National Computing Centre.

Threshold courses are 40 weeks long, run by further education colleges and include 24 weeks of work experience in industry where the student's work is guided by college tutors and his work supervisor.

How successful has this scheme been?

Success, of course, depends on what you want to measure. What was the scheme supposed to deliver?

I believe that it was two things: firstly to train people who would otherwise be without useful skills and therefore with little or no prospect of building a fulfilled life for themselves.

Secondly, to provide employers with useful junior computer staff who would not otherwise have been available. Judged by these two criteria, the scheme has worked well.

Average Threshold students have perhaps an "O" level or two, but are more likely to have two or three CSEs and only very rarely an "A" level. They are therefore, apparently, almost inevitably barred from jobs in operations or programming.

Forty weeks on Threshold, however, seem to make a world of difference and 80% of all the students get jobs within three months of completing their course.

This year just over 500 students will be leaving this kind of course at a cost per student of about £1,500. Next year it is hoped that 1,000 student places will be made available.

The courses are held in most regions of the UK with the exception of the South West — come on Plymouth, Exeter, Swindon and Bristol! If you are in a college and would like to run a Threshold course or if you are an employer who needs staff, contact George Penney at the NCC on 061-228 6333. As they say on the phone-in programmes — "the lines are open now".

The other national scheme — and equally successful, too — is Tops. This year 90,000 people will take some sort of retraining course sponsored by Tops. Just over 2,000 of these will be systems, programming, operations and computer engineering courses. Table 1 shows how this total is made up. Tops courses are run by colleges and by industrial and commercial organisations — including my own.

Readers of Bernard Allen's column (CW, November 2) will be familiar with the operations course run at Borehamwood college and aware of the success of this type of training for operators.

The success we have had with our own programmers' course makes it quite clear that Tops programmers are in high demand as well, and I'm sure that other organisations running Tops computer courses have a similar view.

Our own course is, I believe, typical. It is 15 weeks long including a five week industrial experience segment and concentrates exclusively on Ansi Cobol for IBM installations.

All students design, code, test and prove a case study program before going to employers for their five weeks and many are recruited by the organisations which have tried them out in this way. Most students, therefore, have a job to go to before the course is over.

So much for the national scene. What can private industry do? There are three key words which sum up the action we should all be taking. These are, "attract", "keep" and "develop".

We need to attract more people into our business. This means convincing school, college and university leavers that a career in DP is a good thing to follow.

The CSA, as befits a trade organisation, is already working with careers advisors at university to encourage graduates in non-computing subjects to consider a career in computing or to take a conversion course at post-graduate level.

Individual organisations can, I believe, do much more at a local level to establish good relations with schools and colleges and to provide practical encouragement to people studying computing.

Keeping the people you already have is obviously important. (I also take it to include getting the people you want to keep.) Getting your selection practices right is not difficult; it just takes time and determination.

Too often one supervisor carries out one interview and recruits an applicant. It might pay dividends to let three people — supervisor, manager and personnel officer — see the application, and the applicant.

Additionally, if you have a team of specialists who must work as a team perhaps the applicant should meet the team. It's easy in training, all applicants take a test class with existing tutors in the audience. It may not be so easy in other disciplines.

Once you have caught your programmer you need to keep him. Why does he like you and want to stay? What turns him on?

According to an article in the US magazine, Datamation, programmers in the US are motivated by technical achievement, interest in the work itself and the guidance and counselling they get from their supervisors.

They are not turned on by job security, working conditions or company policy.

I imagine that few installations can provide a constant flow of ego-fulfilling work for all their staff. Good supervision is therefore important and job enrichment practices a legitimate way of retaining the staff you employ.

"To achieve and be recognised is not the same as having your achievement recognised" — thoughts of Chairman Hartzberg. Staff who achieve deadlines, targets and high quality performance need to have that achievement recognised by their peers and by their supervisors.

Productivity tends to be a dirty word these days but provides another alternative to searching for more staff and implies that we make better use of what we've got.

There are many program development aids which are expensive to use but cost effective in terms of their achievement.

How can you get more of your share? Use the national schemes. Help attract more people into the business. The only solution lies in recruiting untrained people and training them ourselves.

Tops computer students

	1977	1978
Systems analysis	82	100
Programming	781	1,184
Operations	226	576
Data Prep	184	78
Engineering	193	189
	1,466	2,127

Table 1.

THE STORY BEHIND THE NEW RADIO WAVELENGTHS

On the 23rd of November many familiar radio programmes will be found at new positions on the tuning dials of our receivers. What are the technical reasons behind the changes? And why did the BBC choose the particular new wavelengths for Radios 1, 2, 3 and 4?
The November Wireless World brings you the whole story — plus useful tables listing the new wavelengths of all the UK radio stations involved.
Also in this issue: constructing a noise reducer for tape recording; an unusual design of electronic burglar alarm; a survey of laboratory "breadboards".

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The importance of educating a wide range of people in the development and use of computers poses a major challenge to the teachers as well as to the taught and the teaching methodology used is of fundamental importance.

In this article, which focuses on some of the teaching techniques used at ICL, CONWAY BERNERS-LEE, based at ICL's headquarters, who has been in the computer industry since 1953, describes how one such technique proved to be of great value to him when he had to learn about a new product very quickly.

Berners-Lee has written a number of articles popularising Operational Research applications and in recent years has been using these techniques on performance evaluation work.

Learning the right way—step by step

As part of its training programme ICL uses 1500 Series systems to assist students. Here, the student is reading how to load the 1500 with a cassette which will take her through the machine's assembly language in outline. ICL estimates that a student should be able to write, assemble and test a small program using this method by lunch-time.

SUPPOSE you are the boss. Your computer department sticks out like a sore thumb — it produces too little and too late.

It does not understand you or identify with your business or policies. It is very mysterious and maybe it is best left alone since after all there are many other pressing problems. However, sooner or later the nettle must be grasped.

But how? It's no good talking to the experts and as for the salesmen, his interest is in selling you more kit.

What you need to do is to consult with your peers in other organisations—people bearing equally heavy responsibilities and faced with similar problems, albeit in a different context.

It would, however, help to have someone from the manufacturer who also operates at your level of responsibility.

What is needed is a carefully and sensitively structured meeting lasting long enough for the problems to be adequately examined and conclusions reached. In such a meeting all the participants expect to learn.

ICL has been doing this regularly at Hedsor Park for some time now and certain conclusions emerge. A fundamental rule is that there must be no jargon. If there is, the ICL director, (no less) must insist on an adequate translation.

Early on there will be a very small programming example — just large enough to make the point that clear specifications are the essence of good project management.

What can emerge from two days of working in this way as a group is a confident realisation that though computer departments are peculiar, they are no more so than other specialised departments, and they can be managed in basically the same way by setting clear objectives together with realistic milestones regularly monitored.

This type of educational activity is intensely demanding. The director leading it must be supported by staff who are themselves candidates for major responsibility at some stage in their careers. It is very expensive for all concerned — but very worthwhile.

Suppose, on the other hand, that you are in a somewhat different position. This time you are a specialist with a need to know as much as possible as quickly as possible.

It so happens that I found myself involved with evaluating the performance of point of sale systems and I needed to get to know the ICL 1500 processor in detail very quickly.

I was at Beaumont at the time and expected to read it up in the library there. Instead, I was shown into the 1500 suite with 1500s and some binders like the one in the photograph.

The binder contains a text, an audio cassette and also a 1500 cassette. All three are used in conjunction. After being guided through the introductory material the student is taught how to switch on the 1500 and load the cassette.

A teaching programme then uses the small screen on the 1500 to introduce the machine to him to the point where he can run a job.

As a reward he is allowed to play a few games, but he soon gets curious about the next binder. This takes him through the assembly language in outline — just enough to enable him to write, assemble and test a small programme before lunch-time.

This is not just a technical achievement: the technology is trivial. It is a teaching achievement — the work of people who have an exceedingly competent understanding of the human learning process.

For instance it is a great thing if you can get the learner right to the end of something right at the beginning because that gives him the feeling that the whole learning task is manageable.

At the ICL customer engineering training establishment centre this "mixed media" approach is used extensively. In general, it is found that the audio cassette is best used to provide a connecting thread linking written text together with worksheets and/or interactive video sessions.

The establishment houses about £5 million of equipment comprising processors and peripherals for all types of engineering maintenance training.

A special package has been written for 1900 systems to simulate system responses for any system. This is used for both operator training and for diagnostic training — for both 1900 and System 4.

The package, known as Lora, Lecturer Oriented Response Analyser, is much more economical in the use of resources than the use of the systems being simulated would be, since there is a great deal of think time.

An interesting by-product of this way of working has been that those who have used the Lora language find that if they then have to set up a purely "manual" teaching package (not involving the use of a computer for the teaching process) they find that they are better at it.

Television can be most useful in many learning situations. For example, when training engineers to adjust a device such as a disc, one group of students can watch a previous group's efforts in detail before doing it themselves.

Teachers are also encouraged to criticise their own performance from a TV recording of the lesson.

In this connection, however, it should be noted that the availability of sophisticated teaching equipment and procedures is placing the teacher in a more tutorial and less theatrical role.

At the same time, the students themselves are playing a much more active part.

Training is so important that it is too important to be left solely to training establishments, so small training departments are to be found throughout ICL. It has been found that it is very helpful to the people concerned to plan and anticipate training needs.

The annual appraisals of staff provide feedback on the training needs of individuals in relation to their present and future careers. At ICL Bracknell, the training department ensures that people are kept abreast of developments inside and outside the company through weekly voluntary lunch time presentations with a wide range of topics.

These include overviews of the design of particular items of hardware or software and also reviews of subjects of much wider interest such as viewdata or machine intelligence.

"Do it yourself" is a good motto for all learning [illegible], and detailed system design is no exception. An occasional but well attended Bracknell lunch-time session features the work of the DIY computer section of the Bracknell recreation club — a spare time activity encouraged by ICL, which has produced a number of very professional microprocessor projects.

The lessons about learning which ICL has itself had to learn have been forced on the company by the sheer scale of the problem and the absolute necessity to resolve it as efficiently as possible.

This can be gauged from the fact that in the UK alone ICL provides every year 39,000 student weeks for training its customers and its own staff, together with a great many packaged courses for use around the world.

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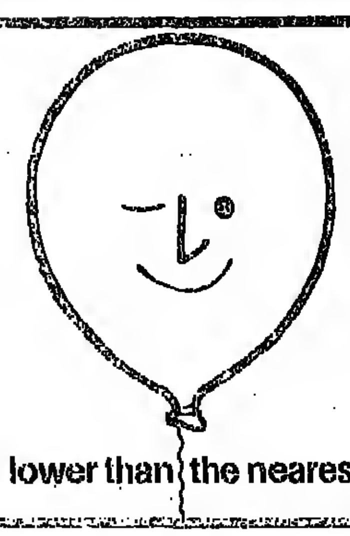

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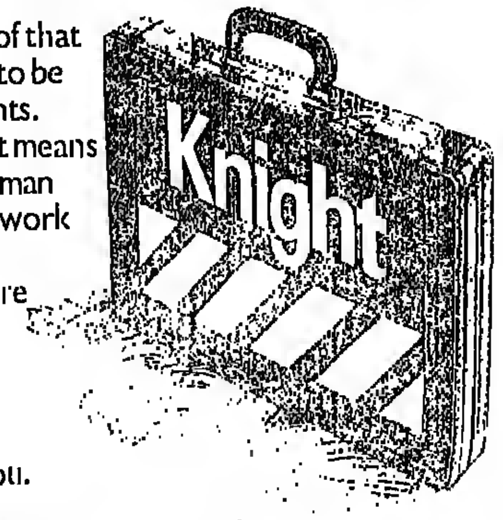

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Engineering Components Limited is a leading group of Companies in the automotive component industry. It is comprised of several subsidiaries, both in the U.K. and Overseas. Continual expansion has resulted from successful business performance over a long period. The group is itself part of Turner and Newall Limited — a major world-wide organisation with interests in the Engineering, Plastics, Construction and Automotive Industries. The company is well sited at Slough in Berkshire, within easy commuting distance of pleasant rural areas as well as being close to London.

Over a number of years the Company has developed a broad range of successful computer systems which are now running on its local ICL installation. Following a group decision to centralise computer hardware, an IBM 370-158, running under MVS, computer has been installed at Group Headquarters and is replacing the on-site machine. To fully exploit the potential of this new machine and to meet the system requirements of our business well into the 80s we are now engaged upon the development of an exciting new generation of systems. The systems, which will embrace Sales, Manufacturing and Financial spheres of the Company's operation, will utilise advanced database and Real-time techniques.

IMS DATA BASE 370/158

Sales Order Processing

The team working on this new IMS DB/DC Real-time Database System currently involved in preliminary system design work for the Slough division of the company. The project has recently been expanded to cover a further division based in Wales and Hemel Hempstead, and the associated preliminary systems investigation and design work will begin shortly. Detailed systems design work will commence before the end of 1978 and continue through 1979.

Additional enthusiastic Analyst/Programmers are needed to become involved at all levels of design, programming, using training and implementation.

Manufacturing Systems

In order to react more quickly to variations in customer demand, a fully integrated Manufacturing System is currently being developed to include Inventory Control, Accounting, Material Requirements and Capacity Planning, and Demand Planning to provide an interface with the Sales Order Processing System. These systems will be supported by IMS Database covering Bills of Materials, Routing and Manufacturing/Purchase Orders. This significant development represents a complete revision of our Production Control System and consequently provides a valuable opportunity to join a team controlling and implementing a major reorganisation. We require Senior Analyst/Programmers to assist with the design and implementation of these application systems. They will be working closely with users in developing operational procedures and interfaces within the departments covered by the new systems.

Finished Goods Inventory Control

A Finished Goods Inventory Control System is being developed interfacing with the Manufacturing and Sales Order Processing Systems, to meet the needs of three main companies within the group. The system will encompass all areas of Inventory Control including Stock Recording, Forecasting, Replenishment Planning, Perpetual Inventory and Stock Analysis. This complex and sophisticated system, utilising database and providing extensive Real-time facilities using a Ferranti mini computer linked to the mainframe in Manchester, is scheduled for completion towards the end of the year. We are now engaged upon the preliminary systems design work and talented, hard working Analyst Programmers are required to participate in the detailed design, programming and implementation phases.

Financial Systems

The Project Team is responsible for the design and implementation of Integrated Accounting Systems which will interface with new Sales Order Processing and Manufacturing Systems. A project currently being worked on is a Fixed Assets plan live this month and a comprehensive Management Sales and Demand Statistics system due live early next year. Other systems, at the earliest stages of planning and design include Nominal Ledger, Purchase Ledger, Payroll and Sales Ledger. These systems will use IMS DB/DC database and on-line real time techniques, and are to be implemented towards the end of 1979.

Database Administration

We are newly established centralised function with three main responsibilities — database development, application project team support and IMS technical functions. Database development involves long and short term planning, design (including security and integrity of data) and implementation of database together with the control of access to data and the co-ordination of action to implement changes. Application Project Team Support includes initial consultancy on the approach to be used in a database environment, optimisation of database call sequence (including modelling with DB Prototype) and assistance with IMS problems in testing. IMS technical functions cover a wide range of activities such as recovery and restart procedures, performance monitoring, reorganisation, unload/reload, IMS support, etc.

The Company offers an interesting technical environment, developing programs on-line using DB/DC software. Applicants should have a mature outlook and be keen to accept responsibility; the emphasis being on the ability to join and develop as members of a Project Team, rather than specific technical experience.

Five weeks' holiday, a subsidised staff restaurant, relocation expenses (if necessary), and an excellent starting salary make these positions extremely attractive. If you are interested in discussing your suitability, contact our Recruitment Consultant.

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Salary is in the region of £3452-£4421 plus 10% shift allowance, 18 days' annual leave plus statutory holidays. A canteen and sports and social club facilities are available.

Closing date 18th December, 1978.

Job description and application forms available from the Personnel Department, Highcroft, Romsey Road, Winchester. Tel: Winchester 63811, Ext. 329.

COMPUTER SYSTEMS DEVELOPMENT

Staff with mathematical or engineering background are required to join a development team working in the field of group technology, machine loading and work scheduling. The programming language principally used is Fortran, but experience with other languages would be an advantage.

The work is interesting and varied and involves close liaison with industry in the application of advanced principles of production systems design and operation.

Good commencing salary and conditions of employment; relocation expenses where appropriate.

Please send full details to Manager, Production Technology Systems Department, PERA, Melton Mowbray, Leicestershire LE13 0PB. Tel. Melton Mowbray 4133

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Assistance with removal expenses and temporary housing available in appropriate circumstances.

Application forms are available from Personnel Section, Civic Centre, Newport, Gwent NPT 4UR (Tel: Newport 65491 Ext. 3145) to be returned by Thursday, 7 December, 1978.

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A special two-part feature

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JBA

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Excellent salaries and training facilities. **Contact: Margaret Stevens**

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A superb opportunity to be retrained on DEC mini's.

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For further information on any of the above vacancies please contact the appropriate consultant.
If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

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Salary up to £6450 including standby payments

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Systems Analysts – Should have at least two years' DP experience, including one year's programming. Additional knowledge of the following would be advantageous:–

1. Applications in a Manufacturing environment e.g. *Production/Inventory Control* – Cost/Financial Accounting – Order Entry – Management Information Systems
2. IBM 370 Hardware
3. IMS
4. Teleprocessing.

Programmers – Should have at least 18 months programming experience, with a good knowledge of COBOL being essential. Additional knowledge of the following would be advantageous:–

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2. Software OS/VS1 – SVS – MVS – TSO
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4. DL1 – Batch and Real Time

Normal large Company benefits apply, including assistance with relocation in appropriate cases.

Apply, giving full details of experience, qualifications, age and present salary to: Position No. BNS 1142, Austin Knight Limited, Brunswick House, Upper York Street, Bristol, BS2 8QB. Applications are forwarded to the client concerned, therefore Companies in which you are not interested should be listed in a covering letter to the Position Number Supervisor.

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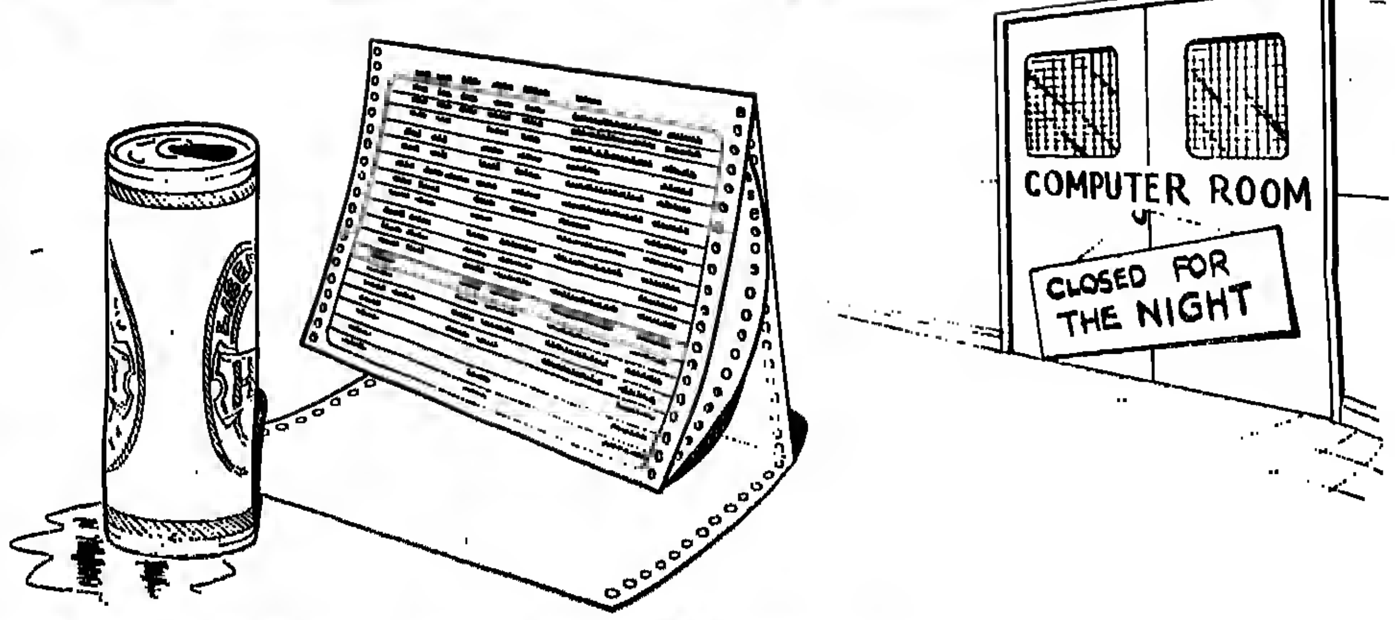

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If you're an ANALYST with at least 3 years' systems experience you may fit the bill. The opportunity exists to grow with an expanding department and to gain experience of T/P and Database techniques — it'll be up to you to make your mark! Don't worry if your experience is not with Honeywell — we'll train you.

The installation comprises a dual Honeywell 66/10 with 384K words of memory, 2,800 megabytes of exchangeable disc storage, tapes, printers and a major network of terminals based on Incoterm's 20/30 controllers.

Reasonable housing costs which offers a wide range of leisure pursuits. With Cambridge only half an hour away — and within 1 hour of London by train, the overall quality of life is high.

The Authority offers excellent conditions of service and generous removal expenses if relocation is necessary.

If you're interested or want to know more about this opportunity, why not call Jenny Spencer at Huntindon (0480) 56181 ext. 370 for information and an application form.

The closing date for applications is December 15th, 1978, and should be sent to:

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Aged 22-28

Salary circa £3,500

Operators with a good academic background and with a minimum of 1 years experience on IBM 370 operating under DOS/VS, with either POWER/VS or GRASP/VS and experience of working in a multiprogramming environment under T.P. is essential.

The installation; located at Gants Hill, Ilford, comprises:

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3340/3344	DASD
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(Local and remote T.P. is supported under CICS-VS) and operates 2 batch and 2 T.P. portions on a very favourable 4 shift system.

Opportunities exist for transfer into Programming and Systems and comprehensive training will be provided.

Please write giving brief career details to: Matthew Dickenson, Personnel Department, Save & Prosper Group Limited, Arodene House, Perth Road, Gants Hill, Ilford, Essex.

SAVE & PROSPER GROUP

Financial Services Department

Systems Analyst

£8160-£8822 (inclusive)

The Council operates a 48K ICL 2904 computer with EDS60, magnetic tape, ODE, 7502 and VDU. Additionally, there are two Philips PTS6810 minicomputers driving on-line cash terminals linked to the mainframe machine.

The Systems Analyst will be required to assist line management in determining the information requirements to improve planning, direction and control of the authority, and to design, justify and implement computer based systems that will meet such needs. With the introduction of VDU future systems are likely to be developed in on-line mode rather than conventional batch processing.

Harlow itself is a pleasant new town situated on the Essex/Herts border. There is a fast and frequent train service to London, excellent shopping facilities and yet it offers green fields and rural surroundings. A relocation allowance is available for suitable candidates.

Applicants should have four years overall computer experience, at least one year of which must have been as a Systems Analyst, preferably with ICL equipment.

Application forms and job description are available from the Head of Department, Personnel and Management Services, Harlow Council, 17 Adams House, The High, Harlow, Essex. Telephone Harlow 26882 ext. 25.

Closing date December 11th, 1978.

HARLOW

ANALYST/PROGRAMMER

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Brian Colquhoun and Partners

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London £8.500

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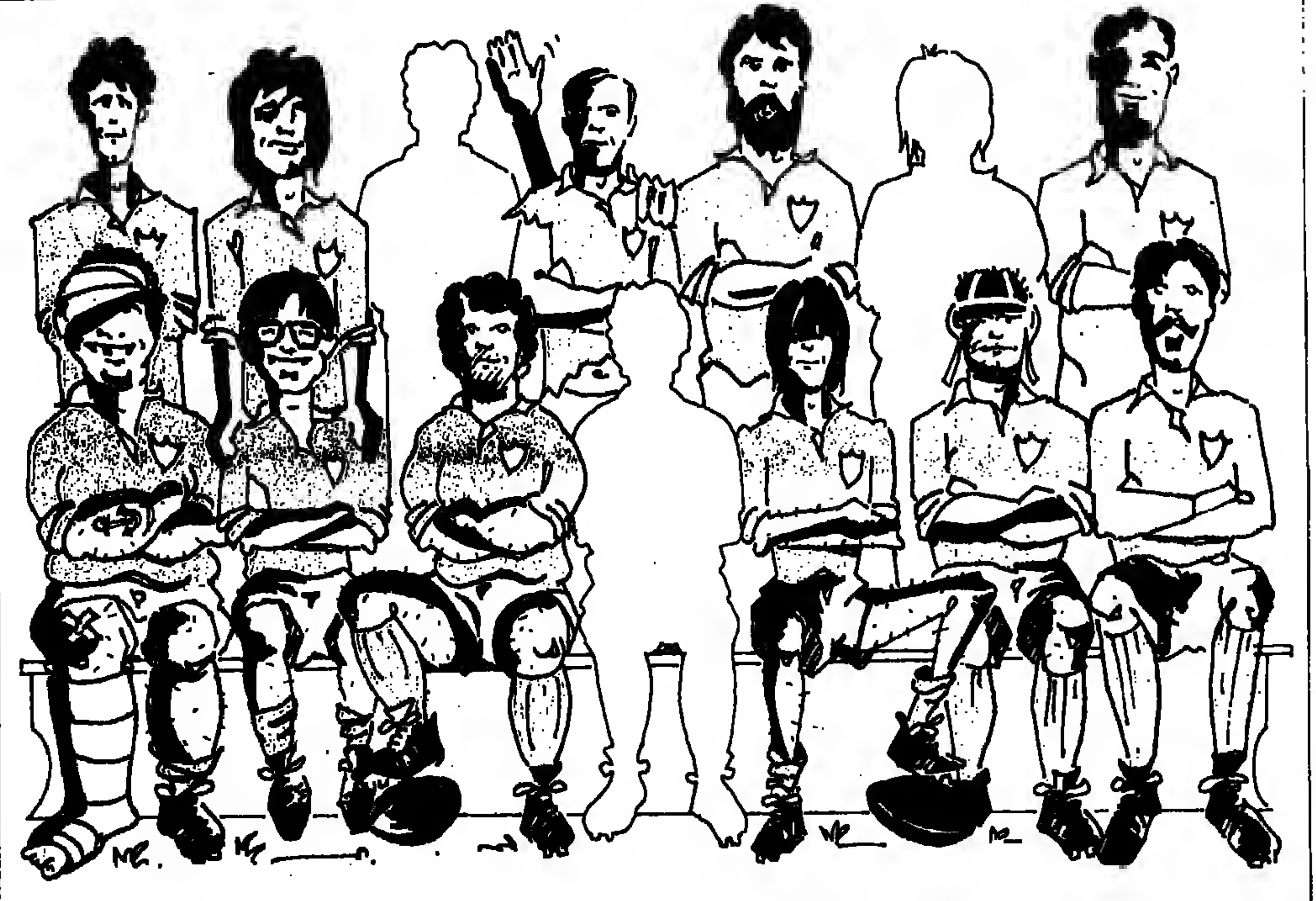

We have some positions to fill

Our client's team is already strong, but they are looking for additional SENIOR SYSTEMS ANALYSTS to meet the challenge of a demanding development programme.

It's the chance to join the computing division of a diversified group which has recently moved to a new data centre in an area of Southern England with easy access to the coast and London, and with a range of realistically priced housing. The centre is equipped with several mainframes and minis, supporting advanced on-line systems.

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You need to have good quality systems experience, preferably in a manufacturing environment. Length of experience is less important than general ability and the right approach to systems problems.

The rewards are a salary up to £8,000 a year, plus generous relocation expenses.

So, if you'd like to join the team, contact Neville John on 01-242 9356 (day) or Farnborough, Kent 52880 (evenings and weekends). Alternatively, write with details of your experience to the address below. Interviews can be arranged at our offices or at the data centre.
These vacancies are open to men and women.

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Salary will be on the scale 1B, £3,189 to £4,601 per annum (under review), according to age, qualifications and experience.

Further particulars may be obtained from the Staff Appointments Officer, University of Nottingham, University Park, Nottingham NG7 2RD, along with application forms which should be returned as soon as possible. Ref. 824.

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Stuart Drayton, Chief Engineer, Cray Research UK Ltd., James Glaisher House, Grenville Place, Bracknell, Berks. Or telephone Bracknell 21515.

CRAY RESEARCH, INC.

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to £4334 plus computer service premium payable over a 3 year period.

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Salary shown includes supplement and [illegible]

Job description and application form [illegible] 13th December, from the Administ[illegible] Computer Unit, West Malling Airfield, [illegible] ME19 6QE. Phone 845845 ext. 3027.

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Ref: RJ 252

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U.K. Re-Insurance Group City of London

Salaries: £6K — £9K + mortgage

A major U.K. Insurance and Merchant Bank Group with a recently acquired U.S. based subsidiary with extensive and soon to be upgraded Computer facilities in the City requires additional D.P. personnel up to PROJECT MANAGER level.

Ideally you will have around 3 years of continuous PL-1 programming experience under OS and/or MVS and will either have on-line expertise or a desire to move into this area or Data Base design through participation in our clients training programmes.

Of particular importance is the ability to work as a member of a Specialist Project Team under strict documentation and programming standards. A second language — ASSEMBLER or COBOL — would, in addition, be a considerable advantage for the fulfilment of career aspirations. Our clients offer a low cost [illegible], private health and non-contributory pension scheme plus excellent restaurant facilities. Interviews will be held at the Company's offices around December.

Database Project Leader Copenhagen

Salary: c. £14K

We are requested to recruit a Project Leader ideally 27-35 years offering an in-depth knowledge of both Data-Base and Teleprocessing techniques in an IBM environment.

The successful candidate will be required to demonstrate current programming and design exposure in the implementation and support of Data Base and/or Real Time Systems having particular involvement with IBM's own software IMS, CICS, TSO or the products of the Independents, namely CINCOM'S TOTAL/ENVIRON; [illegible], SHADOW/[illegible] or ADABAS, whilst for Univac orientated personnel DMS 1100 knowledge is essential. Your past experience should have included PL/1 or COBOL programming and design and analysis experience within a financial or commercial environment.

Supplemental to a high salary you will receive additional benefits including married or single staff accommodation, full relocation expenses, life and disability insurances.

Real Time Programmers Scandinavia & Spain

Salary: £14K plus benefits

The leading Scandinavian Systems and Turnkey Supplier with offices in Scandinavia, Nigeria and California requires FORTRAN and/or ASSEMBLER programmers for its home based and Spanish operations. Whilst the applications under development are sophisticated Real-Time projects previous experience of Real-Time is not absolutely essential but in-depth FORTRAN and ASSEMBLER programming expertise is a pre-requisite. Preference will be given to those candidates who have very recent or current experience on UNIVAC 490/4, UNIVAC 1100 series or IBM 370.

Willingness to relocate to Scandinavia or Spain for an extended period is absolutely essential and to assist you in your removal our client will meet all relocation expenses in addition to providing initial paid accommodation.

Interviews will be held at our London offices in mid December and others will be made early in the New Year.

Micro Processor Specialists Rural Thames Valley

Salary: £6.5K — £8.5K

A small but rapidly expanding Micro based Systems supplier has very recently established new Head-Quarters in rural Oxfordshire.

The company is now seeking several Micro or Mini Computer Specialists with 12 months or more practical applications or software development/design experience in either a computer manufacturing or software systems house environment. If you have relevant experience we invite you to discuss your career advancement prospects with our Clients at your earliest convenience in an informal atmosphere.

Those who have Assembler or Basic language experience on Mini or Micro hardware particularly DEC PDP 11, DG Nova/Eclipse and T.I. 900/990 or Micro-Processors preferably Zilog Z80, Intel 8085/6 or Motorola M6800 will be ideally suited.

In addition to above market starting salaries our client offers excellent career advancement prospects and the opportunity to travel both within U.K. and Western Europe.

Logistix, Freepost 32, London WIE 3YZ
01-491 4636
(Reverse charges)
Telex 28800

LOGISTIX

Avon House, 366 Oxford Street, London WIN 9HA

MYRIAD APPOINTMENTS LIMITED

Computer Personnel Consultants

PROGRAMMERS

WATFORD **£4,000-£7,000**

Our client has several vacancies for proficient COBOL programmers who now wish to advance their careers in a technically stimulating and progressive environment:

If you can offer a minimum of one year's programming experience gained on commercial applications and can display the drive and enthusiasm required to contribute effectively, the time involved in discussing your future with us could prove extremely rewarding.

They are planning projects to commence early in the New Year and require professionals who can establish themselves quickly and so play a major role in the development of these new systems.

Situated in a very accessible part of South Hertfordshire, these are excellent opportunities and easily commutable from North London, Middlesex and Buckinghamshire.

Ref. NI/3011

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ANALYSTS

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Distributed Processing using mini computers with stand-alone capability and links to a central mainframe is becoming the most effective and widely used means of providing D.P. facilities to each profit centre throughout a national company. Our client, is currently seeking enthusiastic SYSTEMS ANALYSTS to play a part in the development of such a system.

The successful candidates will be involved in total analysis and design from feasibility study to implementation. They should be able to offer either two years' analysis ability or a programming background with experience in an Analyst/Programmer role.

The company offers excellent career advancement potential coupled with all the benefits one expects from a well-known major organisation

Ref. SWI/3011

PROGRESS TO ANALYSIS

PROGRAMMERS 2-3 YEARS' EXPERIENCE

SURREY/KENT **c£6,250 INC. BENEFITS**

Our client is anxious to recruit PROGRAMMERS with 2-3 years' experience (COBOL and/or ASSEMBLER) to join project teams with the view to future progression to analysis or team leadership.

The company is proud of its employee relations and places great value on internal promotion to the more senior positions. Individual career development is encouraged by a comprehensive training scheme concentrating to begin with on languages, the operating system, database and teleprocessing techniques, moving towards systems analysis and project control as one's career progresses.

The installation is based on IBM mainframe under O.S. with all new systems being written in COBOL. The total benefits package can be favourably compared with the best — increasing the basic salary by approximately 20%. Relocation expenses are paid where appropriate.

Ref. SI/3011

ON-LINE FOR 1979

SENIOR PROGRAMMERS

JUST OFF M40/A40 **£6,000-£7,000**

Our client, well-known in the retail business, is on-line today and has further developments planned for next year.

Successful applicants will enjoy working in an IBM 370 mainframe environment where the opportunity to use advanced software and inter-active programming techniques will be of the greatest interest.

Good commercial applications experience together with 3 years' COBOL is desirable and these positions will appeal to those applicants who already lead teams or who wish to evolve into the senior programmer role at the earliest opportunity.

The company can offer unrivalled career progression as well as the benefits normally associated with a large company

Ref. NWI/3011

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SPECIALISTS IN DP AND EXECUTIVE RECRUITMENT

Ref: CW/3/78

SENIOR PROGRAMMERS / PROGRAMMERS

£4,000-£7,000 PLUS BONUS

CENTRAL LONDON

Our client is a diverse company operating worldwide whose interests range from shipping to hotels. In recent years they have experienced remarkable growth and profitability necessitating a deep commitment to advanced computer based systems. At present they operate a large medium-sized mainframe which supports a complex data base and communications facilities. In 1979 the central computer will be significantly enhanced to meet the development workload and permit the introduction of distributed processing techniques.

There is now an immediate need for PROGRAMMERS AND SENIOR PROGRAMMERS with the following profiles:—

SENIOR PROGRAMMERS

should have:

- A minimum of 3 years' programming experience of which a substantial proportion must have been obtained in a Cobol environment.
- Either some supervisory experience or the ability to lead small programming teams.
- An interest in broadening the scope of their technical skills on a very advanced system.
- A really positive attitude tuned to achieving results.
- A genuine desire to remain an active programmer, at least for the time being.

PROGRAMMERS

need to be:

- Either computer science graduates who have since acquired at least 12 months' practical programming experience or alternatively able to offer around 2 years' hard programming background.
- Able to program in a high level language with a preference for Cobol. Retraining will be given in appropriate cases.
- Commercially aware with a sound working knowledge of ANY MAINFRAME OR MINI-COMPUTER.
- Capable of standing on their own two feet working in project teams under pressure to deadlines.
- Wanting to expose themselves to the best professional standards and prepared to make a contribution to their improvement.

ASSISTANCE WITH RELOCATION WILL BE CONSIDERED WHERE APPROPRIATE

PLEASE WRITE OR TELEPHONE US NOW IN ORDER TO MAKE ARRANGEMENTS FOR IMMEDIATE INTERVIEWS TO TAKE PLACE IN LONDON OR THE SOUTH — OR IF MORE CONVENIENT, TELEPHONE JACK COLLINGS, OUR MANAGING CONSULTANT BETWEEN 7 P.M. AND 9 P.M. ON (0273) 833120.

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the petrochemical computer bureau specialists
require

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for their Trading Division

1 SOFTWARE SALES EXECUTIVE+

The successful candidate for this challenging position will be responsible for all aspects of selling the Company's widely used COMPAID system to the petrochemical, energy and piping industries throughout the world. Considerable overseas travel, therefore, will be almost certainly involved.

1 HARDWARE SALES EXECUTIVE+

In this second important position, the successful applicant will be required to travel extensively throughout the UK expanding the sales of the AD/380 interactive graphics system, the demand for which is growing rapidly.

Both these jobs will appeal to people prepared to accept a challenging and exciting way of life. But don't let a lack of knowledge of computers deter you from applying. What we are seeking first and foremost, in each case, is a proven record of selling success plus a solid background of technological experience. We will provide the requisite knowledge of computers during an initial training period. The preferred age range is 26 to 35.

Davy Computing Limited is part of the Davy Corporation – one of Europe's largest groups providing a total engineering and contracting service in the field of heavy capital plant. Both positions advertised command generous remuneration in the form of a good salary *plus* commission *plus* company car *plus* relocation expenses where appropriate *plus* other normal big-company benefits.

Applications in writing should be addressed to Mrs. E. Bishop, Personnel Officer.

Davy

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Moorfoot House, Clarence Lane,
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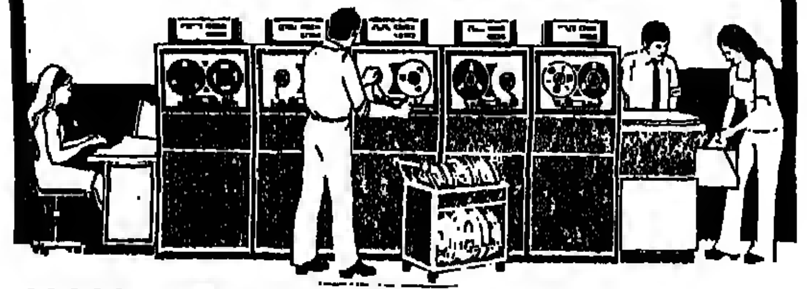

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IBM	DOS	SNR OP	2 YR	£4400	E. LONDON
IBM	DOS	OPERATORS	1 YR	£4200	E. LONDON
IBM	OS	OPERATORS	1 YR.	£4200	E. LONDON
IBM	OS	OPERATORS	1 YR	£4200	W. LONDON
ICL	GII/GIII	OPS/SHIFT LDRS.	1 YR+	£6000c	W. LONDON
ICL	2900	OPERATORS	1 YR.	£4300	E. LONDON
ICL	GII	SENIOR OP	2 YR	£4500	C. LONDON
ICL	GII	OPERATORS	1 YR	£4000	N. LONDON
ICL	GIII	OPERATORS	1 YR	£4300	N. LONDON
UNIVAC	ANY	OPS/SHIFT LDR	1 YR+	£5000	W. LONDON
DEC	PDP	OPERATORS	1 YR+	£4500	C. LONDON
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So that you can get the full information on the many advantages of a career with the Data 100 organisation, we invite you to attend our

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to be held at
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and Wednesday December 6th
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Systems Engineers (Application)
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Systems Instructors
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If you are unable to come along but would still like to know more about a career with Data 100, telephone Tony Dodd on Hemel Hempstead 61281 or write to him at Data 100 Limited, Maxted Close, Hemel Hempstead, Herts HP2 7JJ.

While you are in London don't forget to come along to our Stand at the Compec 78 Exhibition.

DATA 100

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SEE PAGES 30-31

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Rochdale is situated 12 miles North of Manchester on the edge of open moorland.
An ICL 2980 system has recently been brought into operation and the machine and staff are housed in purpose designed accommodation in new municipal offices.
The Authority has an ambitious development/conversion plan for the next three years. The successful candidate will occupy a vital [illegible] and programming team of twelve. Local Authority experience would be an advantage.
Assistance with removal and other expenses and housing accommodation in appropriate cases may be available.

PROGRAMMER

AP.2/3 £3,276/£4,146
(Advert Ref. C 201)

A knowledge of Cobol is desirable.

Further details of both posts may be obtained by ringing Mr. [illegible] telephone No. 611306.

Application forms available by quoting appropriate Ref. [illegible] Chief Personnel Officer, 158 Drake Street, Rochdale [illegible] which they should be returned by 14th December, 1978.

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Last month our client installed their first in-house computer; it's successor is on order for delivery next year. They now wish to develop a number of new systems and are therefore able to offer an outstanding opportunity if you have six months, or more, RPGII programming experience.

In such an active environment it is inevitable that heavy demands will be placed upon you. However, this means that your role will always provide interest, variety and, above all, a challenge. As an important member of a small team the end result of your efforts will always be visible as each project is followed through from conception to completion.

If you feel that this type of environment is what you have been looking for, and that you have the necessary determination to succeed then an excellent salary and first class benefits including flextime, LVs, four weeks holiday and an interest free season ticket + loan await you.

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We are:
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We aim:
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You will:
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- be encouraged to make a significant contribution to the development of both current and new training programmes.
- be given every opportunity to keep abreast of new hardware technology.

You should have:
- good computer systems experience with a proven problem-solving background.
- first class communication skills, and ideally instructing experience, with a strong desire to teach.

We offer:
- * salary around £7000.
- * excellent benefits package.
- * assistance with relocation expenses to the Hemel Hempstead area, where appropriate.
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Interested?
* then please contact Jill McDevitt, Personnel Manager,
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Tel: Hemel Hempstead (0442) 3272.

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CTL Computers Communicate

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Throughout the United Kingdom for a major Manufacturer. You will be offered a good based SALARY plus GUARANTEE, and if required, RELOCATION is available.

The Company will give CAR ALLOWANCES and EXPENSES, they also operate a pension scheme and other fringe benefits. This is an EXCELLENT CAREER OPPORTUNITY. Local interviews can be arranged. Please telephone the Senior Consultant quoting reference CW 184.

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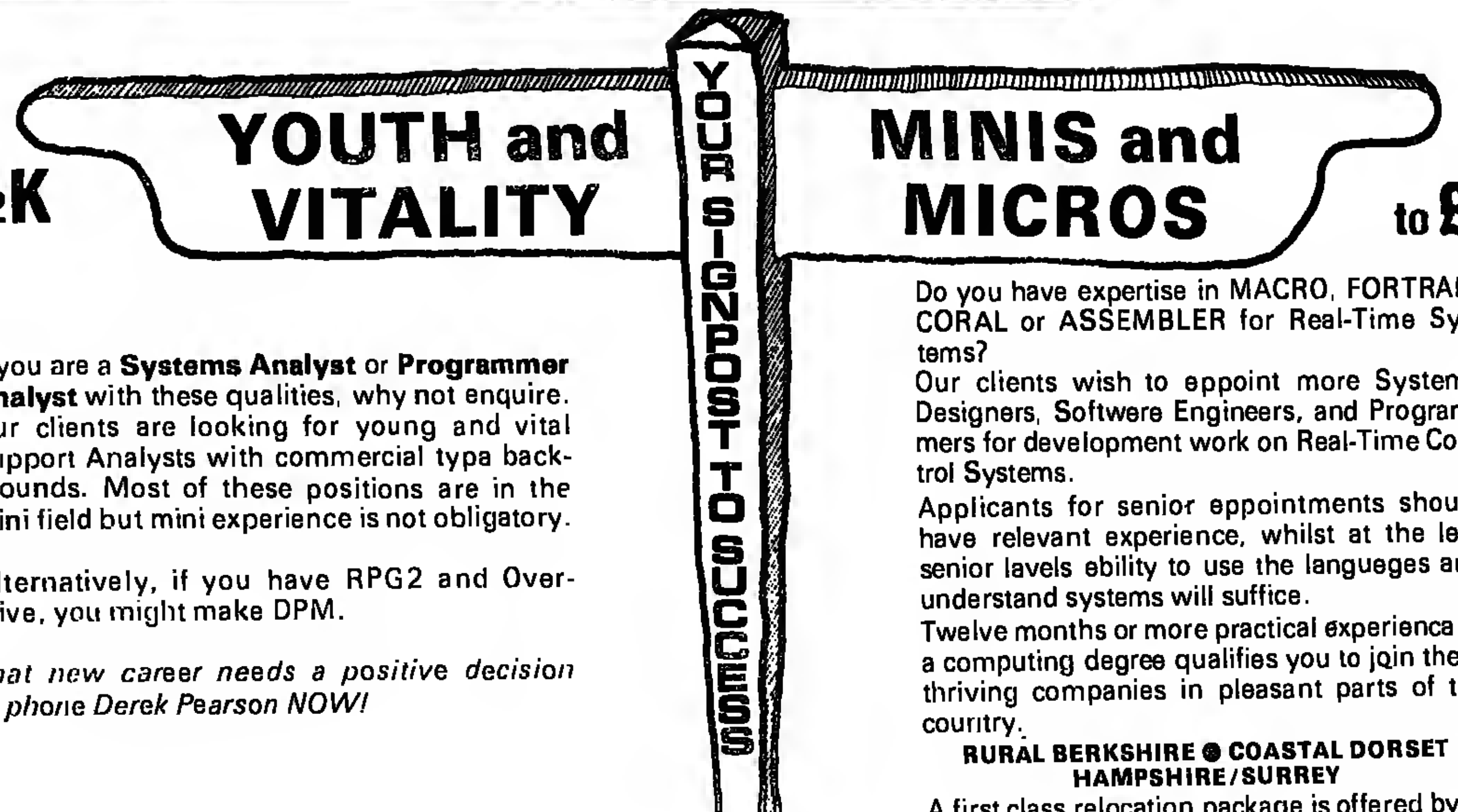

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If you are a **Systems Analyst** or **Programmer Analyst** with these qualities, why not enquire. Our clients are looking for young and vital Support Analysts with commercial typa backgrounds. Most of these positions are in the Mini field but mini experience is not obligatory.

Alternatively, if you have RPG2 and Overdrive, you might make DPM.

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A SENIOR SYSTEMS PROGRAMMER

Ref.40104

with 3 to 5 years of experience in a similar job and with knoledge of Honeywell 6000 equipment, COBOL and IDS

Knowledge of french is an additional asset; for this challenging task in a country undergoing rapid expansion and requires total comitment, GTE International is prepared to pay high remuneration to qualified personnel.

Pls forward typewritten resume with handwritten letter, photo and desired salary to:
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An earnings package with unlimited potential will be established by negotiation, but £15,000 p.a. should be readily achievable.

Company benefits include motor car, free B.U.P.A., contributory pension, expenses payments and four weeks holiday. A good re-location package is available if required.

For immediate discussions, please telephone Mike Hessien (021-632 6848). Ref. CW 120.

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AMI AMERICAN MEDICAL (EUROPE) LIMITED

Enhancement of our existing Hardware and further development of application areas has led to the creation of a number of additional posts in the Computer Section.

The application areas will cover the operations and management work of a large multifunctional organisation

Hardware includes a ICL 1904S, 192K and EDS2DD, operating under GEORGE 3. The system supports VDU and more intelligent devices including ICL 7502 and 1500 range, for a mixture of program development and remote job entry. Languages in use include COBOL, FORTRAN, FILETAB and some PLAN.

Systems Project Leader

Salary range £6993-£7506 per annum
Post ref. P.14

To supervise and be responsible for the Systems and Programming Development work performed by the Section and to deputise for the Computer Manager.

Proven supervisory ability is essential.

Systems Programmer

Salary range £6133-£6493 per annum
Post ref. P.4

a sound knowledge of the GEORGE III operating system together with PLAN, COBOL or FORTRAN programming experience is required.

Senior Programmer

Salary range £6133-£6463 per annum
Post ref. P.13

Ability and experience of supervising programming work is required, in addition to a sound programming background

Programmers (3 posts)

Salary range £4635-£4962 per annum
Post ref. P.6

COBOL experience is preferable although appropriate training will be considered for exceptional candidates with other programming experience

The work involved is both absorbing and challenging and we offer excellent conditions of service including a pension scheme, a flexitime scheme based on a 35-hour, 5-day week plus generous sick leave and holiday entitlements. There is also a staff restaurant and an active Social Club.

All posts are open to both male and female applicants. Salaries quoted include pay supplements

Applications should be submitted on forms available from the Personnel Office, Thames Water, Thames Conservancy Division, Nugent House, Vastern Road, Reading RG1 8DB (Tel. Reading 593331). Please quote post reference.

Closing date: 14th December, 1978.

Thames Water

ANALYST/ PROGRAMMER FOR ZAMBIA

A proven analyst/programmer, preferably with a banking background, is required for service in our subsidiary in Zambia.

Experience in Cobol/SL5 and Burroughs B700 and L series equipment would be useful, although training will be given where necessary.

Position in a small development team offers considerable challenge involving wide all round responsibilities. Plans include the transfer of Head Office systems from visi-record equipment to a Burroughs B721, and implementation of new basic electronic accounting machines at branches, plus maintenance of existing systems.

Emoluments in Zambia will be not less than K18,000 per annum (£11,600 per annum at current rate of exchange). Fringe benefits include free furnished quarters in Zambia, non-contributory Pension Scheme (subject to satisfactory medical), local Zambian medical scheme etc. The assignment will be for three years initially during which period there will be generous home leave with passages paid. Thereafter, term may be extended by mutual agreement, or successful applicant will be offered a position within our Computer Services Department in Poole or elsewhere overseas.

If interested, please write giving full details of career to date to:

Mr. T.C. Shepherd,
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Dorset BH15 2BB.

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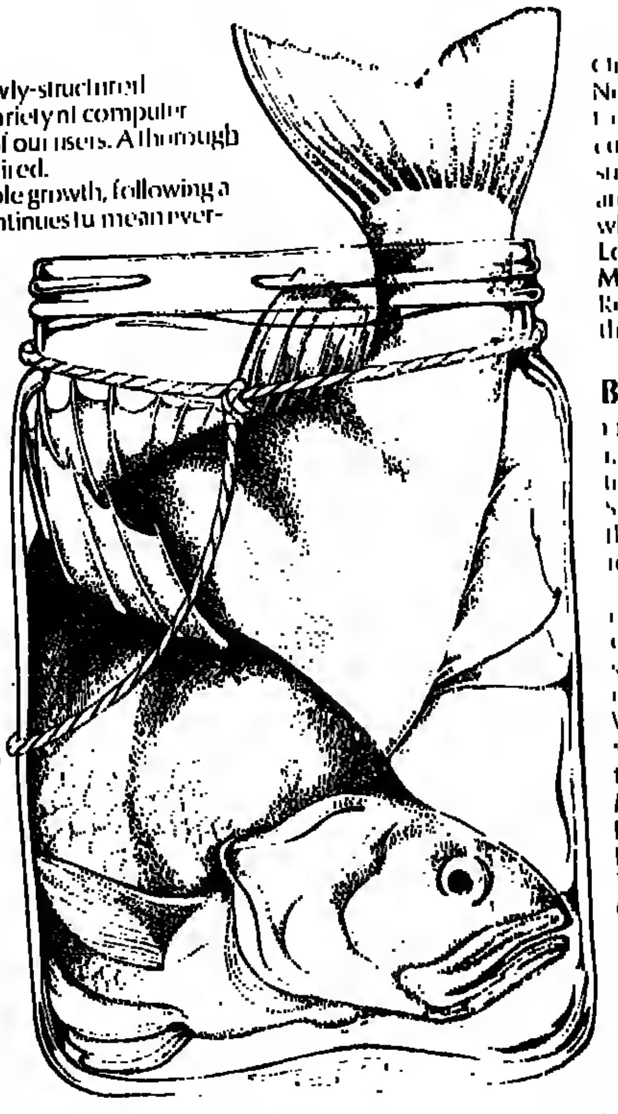
More room in a bigger pond!

For computer professionals in technical support



Further opportunities exist in our newly-structured UK Marketing Division for a whole variety of computer skills to support the wide spectrum of our users. A thorough product training will be given as required.

The ICL Group's rapid and profitable growth, following a turnover increase of 45% in 1977, continues to mean ever-increasing commitments in our highly competitive market.

Bigger Company

ICL is already Europe's leading computer manufacturer. Its technological innovations have gained worldwide recognition, particularly the 2900 Series and more recently the Distributed Array Processor. The Group's market base covers 86 countries around the globe.

Brighter Opportunities

If you are one of the dedicated professionals we seek, you will work closely with our existing and prospective customers to optimise the application of our computer systems. Vacancies exist in:

Project Management
£6,000-£10,000
Our senior PMs take responsibility for seeing through significant projects, and we particularly need people with proven ability in the computer field who can rapidly develop into these positions.

2900 Implementation
£4,000-£8,000
Technical specialists who can ensure the smooth implementation of sophisticated computer systems.

General Support
£4,000-£7,500
Technicians involved in pre- and post-sales activities to ensure customer satisfaction across a wide range of ICL products.

Consultancy
£5,000-£9,000
Specialists in software or applications systems (eg TP, database) who can provide particular expertise to all levels of customer management and technical staff.

Our appointments range from North East Scotland to the South Coast, both at ICL offices and on customer installations. We have substantial requirements in and around the following locations, where interviews will be arranged:

London **Birmingham**
Manchester **Edinburgh**

Relocation assistance is available for the men and women we appoint.

Broader Variety

Our equipment spans the entire range of customer requirements from the small 1500 series through System Ten, 2903 systems and the 1900 range to the largest 2900 machines and ICL DAP.

You will be working in an exciting, constantly developing environment with the intellectual stimulation of being alongside some of the best people in the industry. We are particularly looking for specialists in

Operating Systems
MAC/TP/RJE
Languages and Compilers
Data Management
Transition
Operations

Better Training

If you have the right technical ability plus an outward going personality, this is more important than proven skills on our equipment. We have a number of training centres, with an excellent reputation for both technical and management training. The largest, at Windsor, has a training staff of 150.

If your present environment is restricted and you are looking for something bigger and better with more variety and prospects, all this adds up to a first class opportunity to move to that 'bigger pond'. Alongside this, there are also a limited number of both sales and secretarial openings in our UK Marketing Division.

Our new brochure 'Your Future with ICL in Technical Support' gives more details of the opportunities.

Either telephone our special Recruitment Centre based at Bailey's Hotel (opposite Gloucester Road underground station) on 01-[illegible] and ask for Diana Neale or one of her colleagues any time between 9.00 am and 8.00 pm.

Alternatively write with full details of your experience, quoting reference CW1130, to ICL (UKD) Recruitment Centre, c/o Bailey's Hotel, 140 Gloucester Road, London SW7.

International Computers

Think computers – think ICL.

ICL

NEW YEAR NEW JOB!

A special two-part feature

In January 4 & 11 issues of Computer Weekly a special two-part feature will be published designed to give our views and comments on the '79 job outlook.

To advertise in this feature contact:

NANNETTE GIBBS 01-261 8174
or
MARK WILLIAMS 01-261 8019

REPORTER — SUB EDITOR

Europe's leading computer and digital systems monthly magazine — Systems International — needs a young, imaginative and technical writer to join its lively team based in South London. He/she will be expected to generate articles on computer topics so some knowledge of the computer industry is required.

Apply to Frank Booty, Editor, Systems International, Dorset House, Stamford Street, London SE1. Tel: 01-261 8011.

MANAGEMENT & EXECUTIVE SELECTION

SALES

Have you heard the one about . . . . . .

Next year: We're going to release a new product (or at least the literature)
Next year: We're going to put more emphasis on support (i.e. capital letters in the brochure)
Next year: The company's marketing department will provide all the leads (providing you buy the dogs)
Next year: You could find yourself a Manager (could you please find him, we've been looking for days)

YOU HAVE!! *Then don't wait for next year, act now*

Talk to us about the positive companies in the industry.
We think you'll find there are more possibilities than you realise. Here are just a few

BRANCH MANAGER	N. Home Counties	Earnings £15K + Car
SENIOR SALES EXECUTIVE	N. Home Counties	Basic to £9K + Guar. + Commission + Car
SALES MANAGER	North of England	Basic £11K : £20K Guar. + Car
MARKETING MANAGER	London	Salary £10K + Car
SENIOR SALES EXECUTIVE	London/Birmingham/ Manchester	Basic to £7K, QE £13K
TRAINEE SALES EXECUTIVE	South of England	£ Neg.

Contact Faye Ogilvie on 01-637 9611

Suite 201/6, Albany House, 324 Regent Street, London W1R 5AA. 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION

Recruitment Officer Computer Manufacturer

Starting salary around £8,000

LOCATION — SLOUGH

Our client is Kienzle Data Systems Limited, the U.K. subsidiary of one of Europe's largest and most successful computer manufacturers. Based in Slough, they now wish to employ a Recruitment Officer to be responsible for assisting line management in the very difficult job of recruiting 'the right people'.

The expansion programme that Kienzle have planned for the next few years is significant, and this is going to mean a large number of new employees will be required in many different locations in the United Kingdom.

Therefore, we want to meet an innovator, someone who will enjoy developing recruitment campaigns, writing advertisements and meeting people, and will not mind travelling within the U.K. to do so. The successful applicant should also be an experienced interviewer and will make a significant contribution to the decision of "whether or not" an applicant is employed. Later, it is very likely that the position will develop into the full personnel function.

If you have an interest in personnel, or are already experienced in that area and can relate this to "some years of experience" in computing, we would like to meet you.

Please send a description of your career to John Goldsmith, quoting reference no. 2078/CW.

WE ARE ALWAYS INTERESTED IN HELPING *YOU* WITH YOUR CAREER
John Goldsmith (Computer Recruitment) Ltd, 15 Buckingham Palace Road, London, S.W.1.
Tel: 01-828 5356 – 24 hour answerphone service.

Computing Services Association

JOHN GOLDSMITH (Computer Recruitment) Ltd.

Programming Team Leaders

£7,500

Everest Double Glazing, part of the RTZ Group, is a fast growing and profitable company leading the market for secondary windows, patio doors and entrance doors.

The DP Department is now expanding its mainframe to meet this increased demand and the staff structure is being reorganised to match this rapid expansion. Three positions as Team Leader are being created and this provides excellent opportunities for career development for male/female computer personnel.

Applicants must be self starters with good, low level programming experience and the ability to motivate and control a small team of programmers. Knowledge of IBM Assembler together with experience of team leading on one or more major projects would be a distinct advantage.

A high sterling salary is offered with a review after six months, and training in systems analysis for the right candidates. Also offered are four weeks holiday, staff discounts and the opportunity to work in a pleasant location on the fringe of London just two minutes from Cuffley Station.

a member of
the RTZ Group

Please write, with brief details to Mr. O. Kings, DP Manager, Everest Double Glazing Limited, Everest House, Cuffley, Potters Bar, Herts.

Another 18 Operations Professionals have joined us

...as a result of our recent advertisements and they are now key members of our team

THEIR WORKING CONDITIONS — are second to none, as you would expect in a multi million pound data centre, one of the most advanced computer technology centres in the world.

THEIR CAREER PROSPECTS — are unrivalled as our philosophy is that computer operating provides the grounding for many career opportunities within D.P. at BL Cars.

And when you consider the equipment: 1 x 3033, 2 x 370/158 and 2 x 370/145 and our internal and external training schemes, need we say more?

THEIR BENEFITS — are those you would expect of a major company and include 5 weeks' holiday, pension, life assurance and sick pay schemes and substantial discount on BL cars and accessories. Plus generous relocation assistance as necessary to this pleasant rural area, where housing is favourably priced.

But we still need more ambitious men and women, so why not join them?

Right now we're looking for:-

Network Operators • Senior Computer Operators

Ideally with experience in at least 2 of the following: VM, DOS/VS, VSII, HASP, MVS, TSO, IMS or CICS. But more important, you should have a genuine interest in computing as a career.

So, if you're looking to be part of a successful team, using the finest equipment available, ring Rod Watts now on Redditch (0527) 28515 or alternatively write for an application form to,

Operations Manager, BL Cars Limited, Data Centre
PO Box 5, Redditch, Worcs.

Cars Staffs & Services

REMINDER

Don't forget whilst you're at Compac 78 to come and see Tektronix at the Royal Kensington Hotel on:

Tuesday, 5 December 1000-1800 hrs
Wednesday, 6 December 1000-2130 hrs.
Thursday, 7 December 1000-1800 hrs.
to discuss your future with us.

We're looking for Sales Executives to promote and sell our graphics terminals and associated computer peripherals; Product Support Engineers, to give technical support; and Systems Analysts for software support to our Sales Executives and our customers on their premises across a wide range of application problems.

If you can't make it to our informal talks, write to or phone Jim Rockall at Tektronix UK Ltd., Coldharbour Lane, Harpenden, Herts (Harpenden 63141) for an application form and information package.

Tektronix®
COMMITTED TO EXCELLENCE

COMPUTER MANAGER

A Public Company requires for its group headquarters based *in Central London* a *Computer Manager* to take charge of its computer operations.

The successful candidate (male/female) will be responsible for computer and data processing operations currently time sharing on a 370/158 computer using bureau time for on line batch processing to nine terminals.

Applicants should have several years experience in systems design and data base usage, be acceptable to a substantial amount of travel in the UK, be qualified to deal with diverse and varied people for the interpretation and specification of their requirements, to introduce a in-house computer within the next 3-4 years.

Preferable age would be 28/35 years.

Salary will be fully commensurate with the responsibilities of the post together with fringe benefits which include a contributory pension scheme and a Company car.

Applications with details of background and experience to:
Group Personnel Consultant
Blagden & Noakes (Holdings) Ltd.
16-18 Hatton Garden
London EC1 8FJ

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datascene

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FREELANCE PROGRAMMERS

register now for immediate and forthcoming requirements throughout

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If you have 3 years in D.P.
If you want a top contract
If yo want a top rate

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London W1R 7FB
01-439 1856
24hour answer phone

BBC PUBLICATIONS
require a

SENIOR OPERATOR/ SCHEDULER 2903

Salary £3,625 to £4,425
No shift working

ICL 2903 32K computer with EDS 30s and Magnetic Tape. Development of on-line and batch processing system using remote and local VDUs. Applicants with at least 2 years' experience on 2903, should be reliable and willing to take on responsibility.

Ring now for application form:
Miss H. Bowker, 01-580 5577, ext. 3088.

CAMBRIDGE UNIVERSITY PRESS
Computer-Aided Composition

PROGRAMMER/ANALYST

An interesting opportunity has recently arisen for an experienced Programmer/Analyst to join our Computer Aided Composition team and to assist in the further development of an established and well proven computerised typesetting system. Duties would include systems analysis, specification, design, programming, testing, documentation and implementation.

Some successful system design and programming work are necessary requirements for this vacancy. General personal qualities of adaptability, self-motivation and the ability to communicate are more important than experience in particular applications or with specific systems.

The position offers both responsibility and opportunity for self-development in an interesting project which will be the basis of the future technology of the printing industry.

In return, a realistic salary will be offered to the person with the appropriate qualifications and experience. There is also a wide range of attractive fringe benefits which include free life assurance, an excellent pension scheme; generous assistance with relocation expenses will be paid where appropriate and rented housing can be made available.

Write or telephone to **The Personnel Manager**
Cambridge University Press (Printing Division)
Shaftesbury Road, Cambridge CB2 2BS
Telephone: Cambridge 58331 Extn. 233

Consultancy in Manchester

Programmers & Leading Programmers to £5,800 + Benefits
Analyst Programmers to £6,200 + Benefits

Fraser Williams (Manchester) Ltd provides Consultancy services to a broad spectrum of existing and potential Computer users in the North West.

Current development projects in Commercial, Industrial, Scientific and Governmental organisations have created several vacancies for Programmers and Analyst Programmers.

Candidates should be able to produce evidence of their ability, and particular hardware or software expertise is less important than a sound educational background and a desire to develop a career in a challenging and varied environment.

Good salaries linked to a share of profits, together with business expenses ensure a high level of earnings.

Contact John Kinder or Derek Hartley on 061-872 8428 reversing charges, or write to:

Fraser Williams (Manchester) Ltd
Warwickgate House
Warwick Road
Manchester M16 0QQ.

Fraser Williams

MANCHESTER-LIVERPOOL-LONDON-SHEFFIELD-BIRMINGHAM-GLASGOW-TORONTO

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611

SYSTEMS ANALYSTS and PROGRAMMERS £5-9K

Start the New Year with a great new career

We want to talk to experienced and ambitious Systems Analysts and Programmers on behalf of our client, a major multi-national company with their headquarters in London, who are all set to expand their already impressive computing facilities in the New Year. These key positions are currently available:—

SYSTEMS SUPPORT PROJECT LEADERS

Reporting directly to the Support Manager, you will be responsible for teams of Analysts and Programmers developing and maintaining new on-line systems for a wide range of commercial applications — salary to £9K.

PROGRAMMERS

Working within project teams consisting of both Systems Analysts and Programmers, you will be able to enhance your programming skills whilst being given every opportunity to gain the necessary knowledge and talent to move into either Systems Design or Analysis — salary to £7K.

For all these positions a knowledge of IBM DOS/VS with a programming background in Cobol is highly desirable.

The company provide a comprehensive training scheme both on an in-house and external residency basis.

For further details contact Tony McGrath on 01-637 9611 or send your CV directly to him.

SENIOR SYSTEMS ANALYSTS

Reporting to a Project Leader, you will be able to gain invaluable experience in a wide range of sophisticated on-line commercial systems both in design and implementation phases — salary to £8K.

TECHNICAL ADVISER

Reporting to the Computer Systems Development Manager and working as part of a team, you will be responsible for recommendations concerning hardware upgrades (mainframes and minis) and for the technical evaluation of software packages — salary to £8K.

Being a major multi-national company all the usual big company benefits apply, such as subsidised staff canteen, recreational facilities, non-contributory pension, regular salary review, and an extremely good bonus scheme.

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION

COMPUTER OPERATORS

— Near Oxford Circus

George 3 or OS/VS1 — Salary range £4,000 to £4,400 p.a. with valuable extra benefits

When it comes to job satisfaction, it's worth talking to London Transport, the world's largest urban transport system.

At our rapidly expanding Data Processing Department in Central London, we're looking for competent staff with at least 18 months' experience in George 3 or OS/VS1 operation.

The installation currently comprises 2 ICL 1904S, 2 ICL 2904, IBM 370/148 and IBM Series 1 computers, handling Batch Processing, Transaction Processing, Interactive Processing and On-Line Enquiry systems.

Career development and promotional prospects are excellent.

As well as an attractive starting salary, we can also offer other benefits, including FREE TRAVEL ON LONDON TRANSPORT SERVICES AT ALL TIMES.

Telephone the Senior Operations Controller on 01-637 9144, or write to the Staff Appointments and Development Officer, 55 Broadway, London SW1H 0BD, quoting reference 955/C.

LONDON TRANSPORT

West Yorkshire Metropolitan County Council
Traffic Unit

OPERATOR/TECHNICIAN POST REF. TF34005/6/7

T3 £3,732-£4,146 (including supplement) plus 12% shift allowance

The UTC Scheme involves the Computer Control of Traffic Signals in Leeds and Bradford control centres being operational 0600 to 1900 hours Monday to Saturday on a shift basis. The duties of the post include both control room operations and first line maintenance procedures on equipment installed at the control centre and on the street. Appropriate training will be provided where necessary.

Applicants should have operational control room experience or have a background in the electronic/electrical application area. Driving licence required.

Application forms may be obtained from Directorate of Planning, Engineering and Transportation, Room 236, County Hall, Wakefield, and should be returned by 11 December, 1978.

A.T.E. PROGRAMMER

c. £5,500

Cambridge Scientific Instruments need programmer to join our A.T.E. team. [illegible]

write or phone Colin Duple at:

CAMBRIDGE INSTRUMENTS
Rustat Road, Cambridge
Tel. 40021, Ext. 22

CAPITAL APPTS.

FORTRAN

Programmers urgently req. direct for Industrial and Scientific Development [illegible]

ALL AR [illegible]

[illegible] London W1 [illegible] 637 5557 day: 635 3659 eve.

Ipars & Tropics

Rendeck is an international software house with offices in the Netherlands, United Kingdom and the U.S.A. Our group of companies work in various fields and aspects of the computer industry and maintain several specialist divisions.

For our Airlines Support Division we are currently seeking to employ, on a permanent or contract basis, data processing personnel with experience in the IPARS and TROPICS fields to join our companies as part of our planned expansion in early 1979. Successful applicants will work on one of our projects in the Netherlands or the U.S.A., where salaries, expenses and benefits will be well above average.

Interviews will be held in London and Amsterdam throughout December. For further details please contact our London or Amsterdam office.

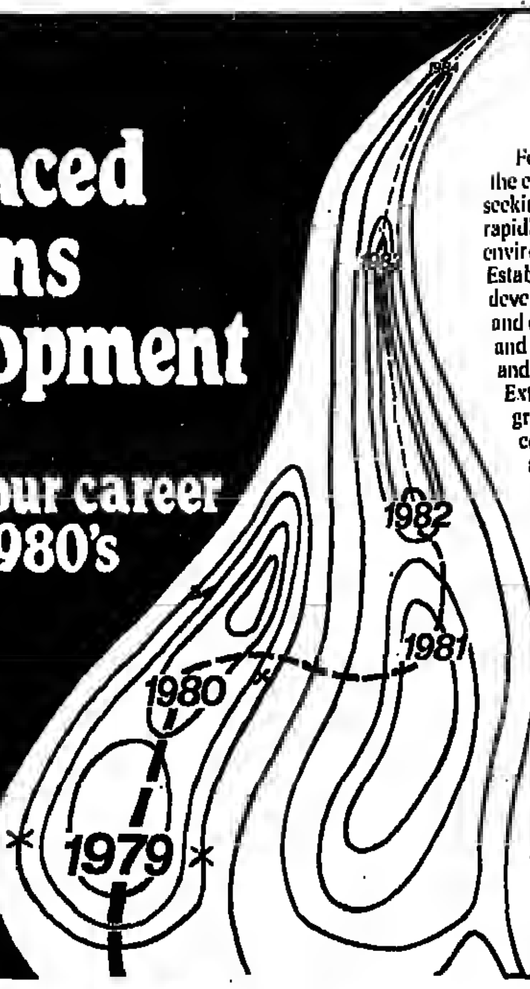
Bridget Kotchie
RENDECK LIMITED
100 New Bond Street
London W1Y 9LF
Tel. 01-629 5438

Richard Maddocks
REDNECK
NEDERLAND BV
A.J. Ernststraat 157
Amsterdam
Tel. 0103120461215

Rendeck

Advanced Systems Development

Project your career into the 1980's



Opportunities for graduates and experienced DP staff in mapping and charting applications.

For the experienced programmer or systems analyst, the computer scientist, or other numerate graduate seeking a career in computing, few areas can rival the rapidly evolving and highly advanced computer environment of the MOD Mapping and Charting Establishment, either in terms of training and career development opportunity, or of intellectual stimulus and challenge. Here the provision of all land mapping and air charting for the Army and RAF is undertaken and much of the work is operational and high-priority. Extremely tight time schedules and constantly growing demand necessitate an increasing commitment to automated production methods and to the supply of map information in digital form, and the team of computer scientists play a central role in ensuring the efficient operations of the unit. Working in this highly sophisticated area of applications, they use some of the most advanced computerised cartography equipment in the world, with a current hardware configuration consisting of two mainframe computers and a number of minis, together with a range of flatbed and drum automatic plotters, free standing and automatic digitisers and edit stations. Over the next five years, however, all the existing hardware and software is to be upgraded, and this, together with the production of digital data in support of an RAF flight simulator project, constitute the two major projects at present in hand.

There are opportunities, within the Science Group, for graduates in the numerate sciences, with or without DP experience, to join the Establishment at this exciting stage and to work on the development of advanced computer systems in the areas of programming, systems analysis and design, and hardware and software requirement analysis. The knowledge and experience you will gain will be invaluable; training in basic and advanced concepts will be aimed at fulfilling your development needs, and job rotation will ensure a broad based understanding to prepare you for management responsibility. Staff are encouraged to maintain currency in hardware and software development and there will be opportunities to attend conferences and seminars.

The Establishment is located at Feltham, Middlesex, and is therefore easily accessible from both London and the outlying rural and suburban areas.

Salaries for Scientific Officers range from £3100 to £4690. The Higher Scientific Officer range is £4375 to £5725.

Qualifications. A good honours degree is required for most posts, but HNC/HND is suitable for some. For appointment as Higher Scientific Officer candidates must have at least 2 years relevant postgraduate experience.

For further details and application form (to be returned by 22 December 1978) write to Ministry of Defence, Mapping and Charting Establishment, Feltham, Middlesex TW13 7AE, or telephone 01-890 3622, ext. 911 (Mrs. Vera Gibbs) or ext. 253 (Mrs. Pat Morrison). *Please quote ref: SA/75/FH*

Science Group

The Polytechnic of North London

Holloway, London N7 8DB.
01 607 2789

LONDON POLYTECHNIC COMPUTER UNIT

USER SUPPORT PROGRAMMERS

Two new vacancies exist for experienced programmers to strengthen and enlarge the advisory role of the computer unit. They will join a team giving advice and support to students, staff and research workers and will also undertake applications work, software evaluation and implementation. A wide range of applications and disciplines is involved but specialisation would be encouraged. A degree or equivalent professional qualification is required and experience in the use of time-sharing systems and in both high- and low-level languages is desirable. Experience or interest in computer aided design, architecture, electronics, business systems or social science would be an advantage.

The hardware: Dec-10 KL processor (512K) with 600 Mbytes of disc storage and a full range of peripherals and interactive terminals.

The salary: On scale from £5363 to £6643 (including London allowance)

Further information and application forms from Head of LPCU, Polytechnic of North London, Holloway, N7 8DB.

UNIVERSITY OF LONDON COMPUTER CENTRE

OPERATING SYSTEMS

The Centre wishes to recruit a number of

ANALYST/PROGRAMMERS

to work on development and support of Operating Systems. An extensive programme of development is under way which includes installation of new equipment, improvement of user facilities, performance measurement and telecommunications development. The work is challenging and the persons appointed will be expected to make a significant contribution to the development of the Centre's services. Candidates are expected to have some experience of operating systems or machine-level programming and to be educated to degree level or equivalent. Familiarity with CDC equipment is not essential. Salary will be commensurate with age and experience and offered within £[illegible] – £7754 (under review) plus £450 London Allowance. Application forms are available from the Assistant Secretary, University of London Computer Centre, 20 Guilford Street, London WC1, Telephone No 01 405 [illegible] and should be completed and returned by 14 December 1978.

CITY OF COVENTRY

TILE HILL COLLEGE OF FURTHER EDUCATION

Principal: D. L. Wright, B.A. (Admin), A.M.B.I.M.

LECTURER II

Data Processing

To teach Data Processing and Statistics/Business Calculations and assist with and develop the organisation of B.E.C. Higher Level Courses.

Candidates should be graduates or professionally qualified and experienced in further education or industry.

Salary in accordance with Burnham Further Education Scale: Lecturer II — £4,101-£5,555 p.a.

Further particulars and forms of application are available from: The Principal, Tile Hill College of Further Education, Tile Hill Lane, Coventry CV4 9DX, to whom completed applications should be returned by 15th December, 1978.

TRESHAM COLLEGE
Northamptonshire

LECTURER I in COMPUTER SCIENCE

Corby Centre

Required for 1st January, 1979 to teach on the National Computing Centre [illegible] course. Some GCE 'O' level work is available (teach COBOL [illegible]). Salary scale £3192 to £[illegible] [illegible]

Communicate with Racal

Product Application Engineers

Data Communications

Racal Milgo Limited leads the field in Data Communications. The Company's comprehensive range of sophisticated equipment is extensively used throughout the world.

The UK Division provides a complete Sales, Engineering, Installation and Maintenance service to computer based users.

This highly successful group now requires two PRODUCT APPLICATION ENGINEERS who will:

- give technical assistance to other members of the UK Division
- maintain a high level of expertise on all new and existing equipment
- provide sales support by visiting customers and attending exhibitions
- organize demonstrations of Company products
- ensure that Post Office approval is gained for equipment marketed in the UK
- conduct in-house training courses

The positions will permit specialisation in either modems or multiplexers.

Candidates (male/female) should be educated to Degree/HNC level and be familiar with digital and analogue techniques.

Previous experience with data transmission would be an advantage.

The Company offers attractive salaries, generous leave entitlement, an excellent contributory pension scheme with free life assurance and relocation assistance where appropriate.

Ring for an application form, or write with details of age, experience and qualifications, to:
David Kichenside, Personnel Officer, Racal Milgo Limited,
Prospect House, Thorn Street, Reading, Berkshire. Tel: Reading (0734) [illegible]

RACAL

Computing and Statistics Clerk

The Overseas Section of our Financial Group has a vacancy for an operator who will be responsible for operating a computer terminal, for input and output control procedures and for contributing to the development of the Section's future computer needs.

In addition there will be an opportunity to participate in other mathematical and statistical assignments, pending their being computerised.

Candidates should be educated to A level standard, numerate, able to work quickly and accurately under pressure. Previous computer experience is not essential but a keen interest in this field will be a strong recommendation.

We offer progressive salaries, first-class dining facilities, social centre, Company Shop, four week's holiday and other benefits.

Send details about yourself to:
Mrs. B. L. Clarke, Staff Department,
Unilever Limited, Unilever House,
London EC4P 4BQ.

OPPORTUNITIES IN SCIENTIFIC APPLICATIONS COMPUTING

WIMPEY

George Wimpey & Co. Limited, Europe's largest building contractor, has vacancies in the Scientific Applications Group of their Computer Services Department.

This Group supports user departments engaged in a wide range of design and related activities: civil, structural, mechanical, electrical and chemical engineering, site investigation, land and hydrographic surveying, laboratory testing, etc.

Fortran is our main applications programming language on a variety of hardware and operating systems: ICL 1904S (George 3), DEC PDP11/34 (RSX-11M), DG Nova 2 (RDOS), Prime 400 (Primos IV), etc.

Our workload is considerable and growing. At present we have the following vacancies with project teams in our West London offices:

ANALYST/PROGRAMMER (Prime) — 4 years' experience.
PROGRAMMER/ANALYSTS (Nova and PDP11)—2 years' experience.
INSTALLATION ADMINISTRATOR/OPERATOR (Prime)—2 years' experience.

Conditions of employment are:
Competitive salaries are offered commensurate with experience.
Over three weeks' holiday per annum.
Flexible Working Hours.
Subsidised Canteen.
New Sports and Social Club.

Application forms and further details from:

Roger Brown,
Scientific Applications Manager
Computer Services Department
George Wimpey & Co. Limited
27 Hammersmith Grove, London, W.6. Tel. 01-748 2554

PROGRAMMING ADVANCED SYSTEMS

LONDON W.1 **Up to £5600**

Looking for a chance to upgrade your experience? Want to learn database and real-time techniques and work to good professional standards?
If so, this is an opportunity to join a major London (Mayfair) installation offering:

- considerable new development work
- training in modern techniques
- good working conditions (new building, staff restaurant).
- a first-class remuneration package, with regular cost of living reviews and salary increases, non-contributory pension scheme, and good prospects in an expanding installation

You should have had two years or so sound programming experience, using ANY LANGUAGE on ANY HARDWARE. Knowledge of COBOL would be valuable, but you will be retrained in this language if you are not yet familiar with it.

We have been retained by clients to recruit for several openings, which have arisen due to the installation of new mainframe hardware and the development of major new systems.

To learn more, ring us for a confidential talk, quoting ref. 686, or leave a message on our answering machine after hours and we'll contact you.

EDP SYSTEMS 01.637 5796
52-53 Margaret St. London W1N 7FF

HAWKER SIDDELEY

Brush Switchgear Limited

Senior Systems Analyst

We are manufacturers of electrical distribution switchgear of up to 132 KV. Our small Computer Services Department has a diverse work load and this results in our analysts and programmers undertaking a wide variety of interesting work. We currently use a shared ICL 1904A for our production and financial batch work and an ICL 2903 dedicated to running our TPS based on-line systems.

Due to an internal move, we now require a Senior Systems Analyst to play an important part in the 2904 conversion work and be involved in the analysis, design, implementation and maintenance of a wide range of batch and on-line systems.

The successful candidate will probably have had at least 2 years experience, preferably with ICL machines, and now be ready for a move to broaden his/her experience. Knowledge of on-line working would be an advantage, but training in the use of the TPS package will be given if necessary.

An attractive salary is offered together with generous company benefits, including relocation expenses, and applicants, male or female, are asked to contact:

R. Newton, Personnel Officer Employment,
Brush Switchgear Limited,
P.O. Box 10, Meadow Lane, Loughborough, Leics. LE11 1HL.
Tel. Loughborough 83131, Ext. 489.

INTERNATIONAL BANKING —EDP

We are a major American Bank, long-established in London. Presently we are expanding our activities considerably worldwide and particularly in Europe. Major data processing projects are currently being developed and more are planned in London, Europe and the Far East. The equipment is mainly IBM 370 and system 3.

As a result of this expansion we wish to recruit a capable young man or women to join our EDP Audit team. Excellent training and experience will be given and an attractive career development is offered.

The successful candidate will have at least three years' Data Processing experience, including Programming and Systems Analysis, preferably in a banking environment. Knowledge of a foreign language will be useful but is not essential.

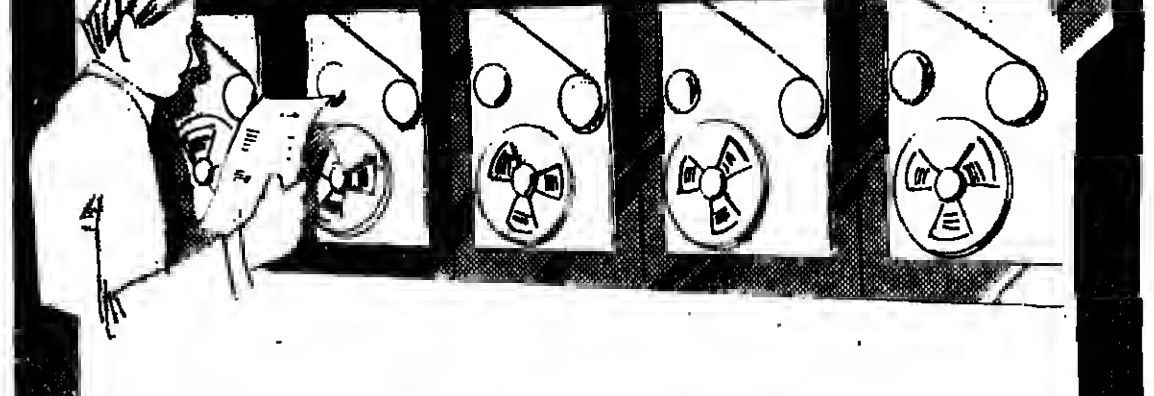
An excellent salary will be offered for this position with attractive and generous fringe benefits usually associated with a first class bank.

Applications, which will be treated in complete confidence, should be addressed to Box No. RD.[illegible]00, c/o E[illegible] Recruitment, 4 Bouverie Street, London, E.C.4. Any banks to whom applications should not be forwarded should be clearly marked on the back of the envelope.

PSS

9-11 Tatton Street,
Knutsford WA16 6AB
Cheshire
Tel: 0565 4925

Nationwide Computer Recruitment Consultants



The positions registered with us currently are simply too numerous to mention in any detail here. Suffice to say that if you're contemplating a move, we'll take the load off your shoulders by doing the necessary. So, whatever your role in DP; whether you're a high flying salesman or a more modest Cobol programmer with a year's experience and live or wish to move to anywhere in the United Kingdom, 'phone us today and we'll get cracking on your behalf.

PSS **24 Hour Answering Service**
Programming and Systemsolve Ltd.

Computer Service Engineers Aren't you sick and tired of a 30,000 a year job!

Miles that is.

A job where you spend too many hours travelling too many miles on motorways carrying too much traffic. Where early starts and late nights keep you away from your home and family. A job that wears you out as fast as it wears your car out.

We're offering you the chance to leave all that behind. To settle down with a service job that's as big and challenging as any. But that's in one place—and an attractive place at that.

We're a company that's in computers in a big way. Out here in Borehamwood we have no less than six GEC 4080's handling every application you'd expect with a big, internationally successful electronics company—and some you wouldn't expect.

It's a big, advanced installation. And it must be kept working as close to 100% efficiency as possible. So we're *looking for a man or woman who's thoroughly* experienced in fault diagnosis and rectification on both mainframes and peripherals—including disc drives—and ideally who has a knowledge of data communications.

If you fit that description, the job's ready and waiting for you. With a decent salary, all the security of a big-company benefits package, and a pleasant location that's on the doorstep of unspoilt countryside, but within easy reach of London.

Before you face another winter on the road, don't you owe it to yourself to find out more about an unusual attractive alternative.

Phone Kevin Chapman on 01-953 2020, extension 3[illegible] Or write to H. B. Batchelder, Marconi Avionics Ltd., Elstree Way, Borehamwood, Herts. Please quote reference MA 78 135.

MARCONI AVIONICS
A GEC-Marconi Electronics Company

SYSTEMS STAFF

Sheffield **to £5,500**

A forward looking systems development plan, which is Board approved, is the reason why our client, a well known International company, wishes to recruit additional systems staff.

The prospects are interesting and the positions offer the opportunity to work on a wide range of new systems developments employing the latest hardware and software.

Sheffield is a modern city, with excellent sporting and cultural facilities, and is situated within easy reach of the Peak District National Park. House prices in the area are reasonable without the disadvantages of long distance commuting.

We think these opportunities are well worth considering and we would like to meet systems analysts to discuss them in more specific detail.

We will meet you in the North, Midlands or London and, by the way, if you are not from the Sheffield area our client will pay your relocation costs.

Please contact Ivor Norton, quoting reference number c/78100, at either office to arrange a discussion about these vacancies or just to learn more about your market potential.

Ivor Norton Management Services Ltd
Recruitment Consulting Division

52 Shaftesbury Avenue, London W1V 7DE
01 734 8882 (24 hour answering service)

P.O. Box 83, Copthall Tower House,
Harrogate HG1 1TS. Tel: Harrogate 66828

[illegible]

FOXBORO is an international manufacturer of digital and analogue computers for process control, with five associate companies throughout Europe. Retaining IBM 370 hardware the U.K. computer complex is based in Redhill, Surrey, and is currently operating under both DOS/VS and CICS/VS with identical systems in Holland and with an international telecommunications network for voice, message and data linking the UK, Holland and U.S.A. As a result of increased productivity involving distributive processing, our client is seeking a person to fulfil the role of Manager responsible for Area Operations development. It is envisaged that the successful candidate will have responsibility for both U.K. and Dutch operations. In addition to providing effective facilities for information services, the position will include management of the total computer network, advising on the suitability and implementation of new hardware and the liaison with the appropriate internal management. It is anticipated that the person will be familiar with current hardware technology and related telecommunications equipment besides having an awareness of relevant employment procedures.

Benefits include:

- ★ Excellent career prospects and working conditions
- ★ Easy travel from Victoria and South Coast
- ★ Subsidised restaurant and sports and social club
- ★ Location in rural and pleasant park-like grounds
- ★ RELOCATION expenses

FOR FURTHER INFORMATION PLEASE CONTACT KNIGHT PROGRAMMING SUPPORT LIMITED on 01-734 0152 (24 hours).

International Business Corporation

WEST LONDON

Our Clients, marketing business systems based on Data General mini computers, have been outstandingly successful both internationally and throughout the U.K. Their present Cliente include leading names in broadcasting, leisure, holiday and entertainments and in the construction and civil engineering industries.
They are now looking to significantly expand their sales and sales support divisions and to this end we have been retained to find ambitious and self-motivated men and women with experience in small business systems or computer bureaux or with a wide applications knowledge.

In particular they are looking for:

AREA SALES STAFF

QUOTA EARNINGS
£15,000 + CAR

SALES SUPPORT EXECUTIVES

CIRCA £8,000 + CAR

COBOL PROGRAMMERS

CIRCA £7,000

Here is an ideal opportunity for you to join a dynamic team with excellent career prospects. Although most appointments are within the U.K., opportunities do exist for you to undertake European and other international assignments.

Interested applicants should contact ROY HIGHFIELD for more information or to arrange an interview.

Reference CW/511/2

HUTTON EXECUTIVE SELECTION LTD.
HUTTON HOUSE,
HUTTON STREET, LONDON EC4Y 8HR

TELEPHONE: 01-353 7141 (24 HOURS)

Hutton
SPECIALIST RECRUITMENT CONSULTANTS

Two Industry Specialists

Building Societies
Banking (Commercial/Foreign)
Circa £9,500
London

Over the last three months our Clients, a large International Computer Manufacturer, have been rationalising and restructuring their Marketing Support Division.

This vital central function consists of a number of experts in particular fields whose job it is to identify and support sales into specific market sectors defined either by application or by product. Marketing executives are involved in a variety of functions such as sales support, promotional work, training and "workshop" activities, supporting large sales, designing applications packages, etc.

There is an immediate need to fill two important application sectors within the Division, Banking (commercial/foreign) and Building Societies. The requirement in each case is for a person, possibly a Systems Analyst, Project Leader, O & M Specialist etc., with particularly heavy experience in one of these environments from "grass-roots" level upwards. Obviously a knowledge of computer based systems would be very advantageous but the main expertise the person would be bringing to the Division, is their knowledge of their particular industry. No marketing experience per se is required as there is comprehensive backing available in this area.

This is clearly a first class opportunity to move to a dynamic rewarding and lucrative environment. If you feel you have the right qualities and would like to discuss the situation, please telephone BOB BOWER the Advising Director. We look forward to your telephone call.

Reference CW/511/

HUTTON EXECUTIVE SELECTION LTD.
HUTTON HOUSE,
HUTTON STREET, LONDON EC4Y 8HR

TELEPHONE: 01-353 7141 (24 HOURS)

Hutton
SPECIALIST RECRUITMENT

Analysts & Programmers

1. Job satisfaction	?
2. Career prospects	?
3. Attractive salary	?
4. Latest equipment	?
5. Reasonable housing costs	?

E.M.S. can help you obtain any or all of the criteria outlined which may be missing in your current position. With 3,000 vacancies outstanding we have one major problem.

We're placing candidates so quickly we're always 3,000 people short.

Apply today

CONTRACTORS

LONDON & SOUTH £175-£250

Cobol/Plan Progs. City. 6 months
Honeywell Cobol. Surrey
Honeywell Cobol. Middx.
Honeywell Cobol. Herts
Honeywell Cobol. Central
Analysts — City
Analysts — Acton. Urgent
IBM — Analysts. Herts
IBM Progs — 750. Herts
ICL Cobol. Herts
Fortran. Various
Cobol Progs. Norwich
PDP8 & 11 Programmer. London. Urgent
PDP & Intel. Herts
Hewlett Packard. Surrey
IBM OS/MCS Cobol/Assembler. Brighton
And many others weekly

MIDLANDS £150-£225

IBM Cobol
ICL Cobol
Honeywell Cobol/IDS/TDS
PDP Assembler
Fortran, Leics and Notts

NORTH £150-£225

Honeywell Analysts. N.W.
Honeywell Progs. Cobol. N.W.
Honeywell Cobol/IDS/TDS. N.W.
Honeywell. Cobol. Yorks and Teesside
ICL Cobol Progs. Various
IBM Cobol. Various
Fortran and Assembler. North West
Honeywell IDS Cobol Programmer. Hull
IBM Cobol DL/1. Doncaster. Urgent

EUROPE — GERMANY HOLLAND SWITZERLAND

Fortran — Univac
PDP — Assembler Ferranti
IBM-IMS Progs.
IBM-TSO Progs. German speaking

Telephone urgently for contract forms and early projects or for projects up to 8 weeks ahead.

0782-623-665
John Wood
Don Walklate
Selina Mills

CALL IN AND SEE US AT COMPEC

Ask at the Honeywell stand for the Hospitality Suite or just walk into our Birmingham Data Centre
Tricorn Fiveways — Edgbaston
(any time)

[illegible]

E.M.S. urgently need over twenty more staff to support the Turnkey Systems Division. Staff are working on a wide range of development projects for both first time and network users. Ability to programme in Cobol and work as a small team member, committed to tight deadlines, will be important.

In house machines include Honeywell Level 6s and ICL 2904s. Experience of Cobol on any machine will be acceptable as retraining will be given. Applications include Ledger, Stock Control, Financial Planning, Payroll, etc. Modular programming is currently used in an on-line environment. All programmers have immediate terminal access for development and testing.

Occasional travel to client sites for testing and installation will be involved. Overtime working to help with tight deadlines will be essential. All Analysts must have had previous programming experience and be prepared to assist on frequent occasions whenever peak programmer loading occurs. Analysts will also be given Business Analyst opportunities to undertake feasibility studies and make client presentations assisting the Marketing teams. The installation is ultra-modern and attractively furnished. Excellent career opportunities are available for all levels of motivated staff, keen to make a personal contribution to our outstanding growth record.

Either attend our interviews directly as advertised, or return your career form today and telephone us for an early meeting. Don't miss this outstanding opportunity of working on 1980's applications now.

Contact: Don Philp, Damien Hendslip.

Staff are urgently required to support growing client consulting commitments throughout the region and to work on a wide variety of development and maintenance projects. Applications include Ledgers, Stock Control, Distribution Systems, Financial Planning through to Payroll. Candidates should possess a minimum 3 years' systems experience and be capable of working in a team environment both within very large and small installations. Opportunities exist to gain experience of major merchandising systems and futuristic hardware. So, with at least 3 years' systems experience, if you are interested in earning an attractive salary and expenses package, complete the attached career form today and return it to E.M.S. without delay.

Consultant: John Wood (Newcastle Office).

EMS is planning substantial further development of both our Consultancy and Turnkey Systems Divisions during the coming months. Our Consultancy activities extend across all mainframe ranges and encompass a wide range of industrial/commercial organisations. Applications must, therefore, present as high level Business Analysts capable of rapidly assessing clients' requirements and proposing relevant solutions where appropriate or quantifying the relevant consulting experience required in either systems or programming and providing the necessary staff from E.M.S. resources. A vast potential market exists for salesmen marketing resource support.

Equally, our Turnkey Systems Division provides total UK coverage, marketing Honeywell Level 6 mini-computer systems and supporting software to a wide range of UK users.

Experienced Salesmen capable of developing their own territories are urgently required. A substantial quantity of leads are also supplied by extensive and vigorous advertising campaigns and Road Show ventures. Salesmen must possess an adequate mini-computer knowledge for Turnkey Systems positions. Cars will be provided with adequate base salaries and high prospective incentives. Apply by telephone for interview during the next week at our Birmingham Data Centre. All UK territories will be controlled from the pending regional development of other Centres.

Consultant: John Wood.

ANALYSTS AND PROGRAMMERS

LONDON **£4K to £7K**

Candidates with one year or more DP experience are urgently required by hundreds of London and Home Counties clients, prepared to pay attractive salaries in order to attract experienced development staff.

E.M.S. are obtaining as many as five offers for virtually all London and Home Counties staff using our computerised recruitment system. We are literally covering every single installation in the country. No one can afford not to find their next appointment without the E.M.S. recruitment system. You're cross matched against every vacancy, rather than just the two or three advertised each week which appear of interest. Every installation, all hardware, operating systems, languages and applications. How can you compete against E.M.S.? We get results and have thousands of satisfied clients each year.

Just complete the attached application form and see how fast we get results for you. Don't miss the golden opportunity of E.M.S. services on your behalf. We have a worldwide service, second to none. For ten minutes of your time to complete the form, we'll prove it to you.

Consultant: Don Philp, Carol Proudman. Telephone 021-454 7908.

HONEYWELL ANALYSTS AND PROGRAMMERS

Entire UK **£4,000 to £8,500**

E.M.S., as the foremost Honeywell support consultancy within the U.K., have a substantial quantity of requirements from most Honeywell users throughout the UK for Analysts and Programmers to assist with new developments.

Honeywell hardware is currently experiencing a high demand sales boom, resulting in many new installations being captured, and a need for both experienced staff and IBM, ICL staff prepared to retrain on equipment, to assist hundreds of new users complete development commitments.

Irrespective of your UK location, if you want the best jobs at Honeywell installations register with E.M.S. We're where the jobs are, all on our computers waiting for you.

Consultant: Don Philp, John Wood.

COBOL ASSEMBLER PROGRAMMERS

London, Midlands, North **4K to 6K**

We urgently require a minimum 2,000 experienced Programmers to help fulfill current client requirements throughout every major town and city within the UK. Clients include Banks, Bureaux, Computer Manufacturers, Consultancies, Distributors, Engineers, etc. All Programmers, irrespective of background, currently interested in a lucrative new career opportunity, should apply urgently to E.M.S. via the attached application form for interviews in the areas of their choice by every local employer able to offer the job interest and salary required. Hardware includes IBM, Honeywell, ICL, NCR through to minis.

Let E.M.S. develop your career for you. Join thousands of other satisfied candidates.

Consultants — Carol Proudman
Selina Mills
Don Philp

You're now joining the rest of the industry in making EMS the leading recruitment consultancy — Read on and complete your career form today! We get results.

PROGRAMMER & ANALYSTS
SURREY TO £5,300 & MORTGAGE

Candidate should have a minimum 18 months' experience. They will join mixed disciplined teams involved in Life, Motor or General Insurance applications. Analysts will be responsible for user liaison and translating his requirements into programmes. Programmers will most probably become involved in either database (ADABAS) or 7P and will work closely with the Analysts from specifications through to final testing. IBM hardware experience under DOS or DOS/VS would be preferred, although other machines will be considered. Languages are PL/1 and Assembler. Again, however, Cobol programmers prepared to re-train will be considered.

Consultant — Carol Proudman.

GROUP CONSULTANT/ANALYST
£7,000 +

Our clients, as a subsidiary of a large Swiss corporation, have developed the need for an experienced Senior Business Analyst to both maintain/enhance existing corporate systems, and to undertake consulting assignments. Experience of operating either in a consulting role with a major software group, or in an internal management services capacity, would be desirable. Equally, ability to operate above on large, high value projects and make balanced concise judgements, will be essential. Presentation will be an important role, consequently self-assurance must be evident at initial interview stages.

Consultant—Don Philp.

CYBER [illegible] AND COMMS. MANAGER
TO £8,500 + CAR — [illegible]

The manager plans, implements and runs the U.K. Communications network consisting of four FOB points. He will also plan and control international communications requirements currently consisting of eight international circuits, manage a staff of 5 comms technicians and manage the remote site operations which number 3 and employ a further 11 people. Applicants must have solid real time experience and have both managed at least 6 people previously, as well as possessing in depth technical ability in the comms field. This position is urgent. Please return the attached application form as soon as possible. Consultant — Don Philp

ANALYST/PROGRAMMER
TO £6,255 + MORTGAGE — Surrey

A Life Assurance group require an Analyst with 2 to 3 years' COBOL programming background to lead a small team of Programmers developing on-line Insurance and Pension systems for an ICL 2904. The company is located in the south of Surrey and offers attractive fringe benefits, including mortgage facilities and a non-contributory pension.

Consultant — Carol Proudman.

ANALYSTS & PROGRAMMERS
TO £6,500 + BONUS — HAYES, MIDDLESEX

A large Honeywell user is developing a management information system to work in a real time environment and urgently requires a significant quantity of extra staff to join in Project Leader and Project Manager roles. Basic Accounting has already now been developed. Previous Honeywell experience would certainly be advantageous but is not essential. The client is also developing an extensive terminal network, offering significant network interest to new applicants.

Consultant — Don Philp.

ANALYSTS PROGRAMMERS
TO £7,[illegible] [illegible] SURREY

A large Honeywell user with a growing staff requirement in commercial applications, requires additional staff urgently to work on a series of new development projects. Any IDS or TDS experience would be especially advantageous. Projects include developing new Order/Invoice systems, using Database file structure with on-line update and interrogation, a major accounting and investment management system, and a pension payments system. All programming will be done in COBOL using Database techniques. Honeywell working conditions and career prospects are available.

Consultant—Damien Handslip/Don Philp

SHIFT SUPERVISOR
TO £4,261 + 27½% SHIFT ALLOWANCE

Duties include ensuring satisfactory liaison between the shift and scheduling sections; to carry out projects assigned by Operation Systems Supervisor; to be responsible for on job training of all subordinate staff. Equally, to ensure that all operating standards are met. The supervisor will also attend such meetings as required, which will include project meetings, staff meetings, etc.

Consultant—Don Philp.

FORTRAN/COBOL PROGRAMMERS
TO £5,500—LEICS.

An opportunity exists for a young graduate with 2 or 3 years' practical experience, to enter the R & D Labs team of a well-known chemical processor. A small team working environment is offered. Currently, the company have their own 1902T, but also use an IBM bureau service. Scientific packages are currently utilized. Appropriate training will be given. A degree in Maths, Statistics or a Scientific subject will be required. Re-location assistance will be provided where appropriate.

Consultant—Don Philp.

IBM PROJECT [illegible]
[illegible]
SENIOR PROGRAMMERS
TO £5[illegible]

An IBM DOS/VS Power user urgently requires additional staff to join an industrial group developing CICS, DL/I and using PL/1 and COBOL. A minimum 3 years' experience of IBM 370 series will be required either in a Systems or Programming capacity. Experience in the areas of Ledger Systems, Order Processing, Stock Control and Production Planning, would be useful. Attractive salaries are available for sound, experienced candidates. Consultant Carol Proudman.

ANALYSTS
STOKE-ON-TRENT TO £5,300

The client whilst preferring a mature Analyst, with a minimum 2 to 3 years' practical systems experience, would as an alternative also accept a junior Analyst with a good commercial background in an engineering environment. Applications will include Financial Systems and assisting with the development of Production Control and Stock Control. The group currently use a DEC Bureau facility. Applicants must be capable at senior level, of taking projects through from initial feasibility study to design, programme specifications and final installation. Equally, communications ability at all levels of the company will be important.

Consultant—Don Welkiste, 0782 623665.

SENIOR ANALYST/ CONSULTANTS
CITY TO £8,500 +

Graduates with a Database knowledge, perhaps also with oil or chemical experience, are urgently required by a large IBM user. Candidates are required for senior posts in teams working on designing business systems, data analysis systems, general trading systems and group accounting. All applicants will ideally be in their late 20's and 30's and initially will be London based. Group travel will be available if required. Both career prospects and job interest are unlikely to be rivalled elsewhere throughout London. First-class opportunities for Top Market candidates.

Consultant—Don Philp.

STANDARDS AUDITORS
PROJECT LEADERS—IMS
ANALYST PROGRAMMERS—IBM

KUWAIT

£20,000 TAX FREE PACKAGES

CICS ANALYSTS & PROGS.

A further number of attractive vacancies are now coming available throughout the consultancies, Ministries, Oil Companies and Trading Groups in Kuwait. Candidates with IBM or Mini experience are most sought after. A Standards Auditor, capable of installing NCC standards, is an urgent priority to work in a ministerial environment. Analysts and Programmers with IMS and ICS experience are required for leading Banks. Constant vacancies are available for OS COBOL Programmers. Due to accommodation shortages, strong preference is always for single or married couples with no children. A maximum of 2 children will be accepted where candidates with no children have not been available. All candidates should be qualified to HND or Degree level and possess a minimum of 3 years' practical experience.

Consultant—John Wood, 0782 623605
or Don Philp, 021-464 7906.

ANALYST/PROGRAMMER
UP TO £8,000 + CAR

BERKSHIRE

Our client who has recently ordered an IBM System 38 and a remote System 34, is looking for a highly professional Analyst/Programmer with a very sound recent technical background and the potential and drive to become the company's Data Processing Manager.

The successful applicant for this challenging and rewarding position will have a proven record of successful program/systems implementation and 2 years' experience of programming in RPG and/or COBOL. He or she will initially play the major role in implementing an extremely sophisticated order processing and inventory control system, with equally challenging and interesting new developments planned for the future.

The position, as a vital member of the management team drawn from all areas of the company's activities, reports directly to the European Data Processing Manager and is based in rural surroundings in the heart of the Thames Valley. There will be a future requirement for some European travel.

Our client is offering an exceptionally attractive benefits package. In addition to a starting salary of up to £8,000 per annum, to the successful applicant who has his or her long term career in mind.

If you are interested in this first-class opportunity, please complete and return the attached application form or ring Don Philp on 021-454 7906.

ANALYST/PROGRAMMERS
BRISTOL SALARY C.£6,000

Our client, a manufacturing and distribution group, is replacing the present central computing facility by IBM system 34's.

This re-organisation has created the need for experienced Analysts/Programmers to play a major role in the development and day-to-day management of new on-line systems in liaison with users.

If you have at least 3 years' experience in all aspects of D.P., i.e. Systems Analysis, Design, Programming, Documentation and Project Control, and you are also able to communicate with all levels of management, this could be your chance to move into a responsible position, where you must be able to identify commercial needs, recommend and implement practical D.P. systems.

In addition, our client is offering a generous staff benefits package, so don't hesitate, complete and return the attached application form or telephone Don Philp on 021-454 7906.

SYSTEMS PROGRAMMERS
MINI COMPUTERS—BIRMINGHAM TO £6,000

EMS require additional experienced Systems Programmers to work on a variety of both mini and micro based systems. Project areas will include operating systems analysis and modifications, communications systems appraisal and to act as an internal consultant providing expertise and guidance to applications teams working both on Turnkey Systems and Timesharing. Equally, scope exists for occasional UK travel to client sites, discussing networking requirements, and having to assist with the design and implementation of a networking system. Multiple operating systems will soon be released by major suppliers such as Honeywell, providing adequate opportunity for full new product involvement, and requiring motivated dedication by relevant candidates, prepared to work occasional unsocial hours to assist the centre to rapidly make full use of new facilities. In addition to early identification and correction of any potential bugs, to ensure smooth installation of both EMS Group and client systems. Good communication skills as a personal tutor will be sought to ensure that users gain full benefit of EMS developments.

Consultant—Damien Hardsip.

EMS CONSULTANTS LTD
61 TOWER STREET
NEWCASTLE UNDER LYME
STAFFORDSHIRE ST5 2RS
Telex [illegible]

Management Services & Computing Division
Telephone: 0782 623665/6/7/8
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For Office Use only

Company Ref. No

SURNAME
Other Names
Address
Telephone
Home
Bus
Ext.
Post Code

Age	Date of Birth	Place of Birth	Nationality	Height	Weight
Married	Children	Car Owner	Driver	Nature of any Serious Illness	

Position Required
Required Salary Range
Present Position
Salary

WHERE DO YOU WISH TO WORK

Within U.K.	Yes/No	Acceptable Areas	Abroad	Yes/No
Will you move	Yes/No		Europe	Yes/No
			Middle East	Yes/No

NUMBER OF YEARS EXPERIENCE

Operating	Programming	Systems Design	Systems Analysis	Management	Total

Available for Interview
Available for Employment

DETAILS OF SECONDARY AND FURTHER EDUCATION

Schools	Date	Examinations Passed
College/University	Date	Examinations Passed

Business Courses with Dates

1. Present Employer
Town
Position
Date Joined

TYPE OF INSTALLATION

Commercial	☐	Bureau	☐	Insurance	☐	Scientific	☐
Manufacturing	☐	Banking	☐	Education	☐	Engineering	☐

HARDWARE	OPERATING SYSTEM	LANGUAGES

Software or Packages

On Line	☐	Real Time	☐	Time Sharing	☐		☐
R.J.E.	☐	Tele Processing	☐	Data Base	☐		☐

APPLICATION AREAS YOU HAVE BEEN INVOLVED IN (Please Tick)

Cost Accounting	☐	General Ledger	☐	Manpower Planning	☐	Personnel	☐
Budgeting	☐	Credit Control	☐	Stock Control	☐	Payroll	☐
Forecasting	☐	Order Processing	☐	Production Control	☐	O.R.	☐
Corporate Planning	☐	Marketing	☐	Petrochemicals	☐	Radar	☐
Sales Ledger	☐	Distribution	☐	Linear Programming	☐	Statistics	☐
Purchase Ledger	☐	Traffic Analysis	☐	Simulation	☐		☐

Projects Completed
Responsibilities

2. Previous Employer
Town
Position
Date Joined

TYPE OF INSTALLATION

Commercial	☐	Bureau	☐	Insurance	☐	Scientific	☐
Manufacturing	☐	Banking	☐	Education	☐	Engineering	☐

HARDWARE	OPERATING SYSTEM	LANGUAGES

Software or Packages

On-Line	☐	Real Time	☐	Time Sharing	☐		☐
R.J.E.	☐	Tele Processing	☐	Data Base	☐		☐

APPLICATION AREAS YOU HAVE BEEN INVOLVED IN

Cost Accounting	☐	General Ledger	☐	Manpower Planning	☐	Personnel	☐
Budgeting	☐	Credit Control	☐	Stock Control	☐	Payroll	☐
Forecasting	☐	Order Processing	☐	Production Control	☐	O.R.	☐
Corporate Planning	☐	Marketing	☐	Petrochemicals	☐	Radar	☐
Sales Ledger	☐	Distribution	☐	Linear Programming	☐	Statistics	☐
Purchase Ledger	☐	Traffic Analysis	☐	Simulation	☐		☐

Projects Completed
Responsibilities

Reason for Seeking Change

Details of type of position wanted

Additional Information –
Please explain below, in an 8-10 line precis, your current duties and applications experience

FOREIGN LANGUAGES

Spoken	Written	Read

Please show the number of years experience of the following. Where your experience is not specified please use the blank spaces.

HARDWARE		OPERATING SYSTEM		LANGUAGES		PACKAGES/SOFTWARE	
IBM 360/370		DOS		COBOL		FILETAB	
ICL 1900		OS		FORTRAN		DRIVER	
ICL 2960/2970		MVT/MFT		ASSEMBLER		CICS	
ICL 2903		GEORGE I		PLAN		IMS	
UNIVAC 1100		GEORGE 2		PL1		BOMP	
UNIVAC other		GEORGE 3		RPG 2		D BOMP	
BURROUGHS 700/800		MCP		USERCODE		PERT	
BURROUGHS other		Exec 8		AUTOCODE		V SAM	
HONEYWELL 66		GCOS		EASYCODER		IDS/TDS	
HONEYWELL 6000		OS 2000/200		ALGOL		MICROFILMING	
HONEYWELL other		VMEB/VMEK		NEAT		TELEPROCESSING	
NCR		J Level		CORAL		DMS	
ICL System 4				DL1			
PDP							

3. Past Employer
Town
Position
Date Joined

TYPE OF INSTALLATION

Commercial	☐	Bureau	☐	Insurance	☐	Scientific	☐
Manufacturing	☐	Banking	☐	Education	☐	Engineering	☐

HARDWARE	OPERATING SYSTEM	LANGUAGES

Software or Packages

On-Line	☐	Real Time	☐	Time Sharing	☐		☐
R.J.E.	☐	Tele Processing	☐	Data Base	☐		☐

APPLICATION AREAS, YOU HAVE BEEN INVOLVED IN

Cost Accounting	☐	General Ledger	☐	Manpower Planning	☐	Personnel	☐
Budgeting	☐	Credit Control	☐	Stock Control	☐	Payroll	☐
Forecasting	☐	Order Processing	☐	Production Control	☐	O.R.	☐
Corporate Planning	☐	Marketing	☐	Petrochemicals	☐	Radar	☐
Sales Ledger	☐	Distribution	☐	Linear Programming	☐	Statistics	☐
Purchase Ledger	☐	Traffic Analysis	☐	Simulation	☐		☐

Projects Completed
Responsibilities

PLEASE CHECK THAT EACH SECTION HAS BEEN TICKED APPROPRIATELY

ADDITIONAL INFORMATION

General

Data Processing

Terminals

Software/Packages

Application Areas

Projects and Responsibilities

Software Engineers Programmers

Turn a new page in communications
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ion. Real-time Program-
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By leading or joining one of our Switching New Products software teams you will have the opportunity to participate in the design of new microprocessor controlled products that are actually achieving the much heralded convergence of communications and computing. You will be using advanced programming techniques, in particular reliability and integrity techniques, that were first developed for the exacting real time requirements of telecommunications and which are now being introduced in many other areas.

Immediate vacancies are for team leaders and programmers with a strong technical programming background (preferably in high level language real time programming). It is expected that applicants would be currently commanding a salary between £4,500 and £7,000. These positions are located in a modern office environment at the company's main development centre. The site is within easy reach of South Hertfordshire and generous allowances will be paid for relocation from other areas. For further information and details of specific vacancies please telephone David Leavers on 01-368 1234 Ext 2661 or write to Tom Kerr, Standard Telephones and Cables Limited, Oakleigh Road South, New Southgate, London N11 1HB.

STC Changing the face of communications worldwide

CENTRAL PUBLIC HEALTH LABORATORY

National Collection of Type Cultures

SYSTEMS DESIGNER/ PROGRAMMER

[illegible] is required for the [illegible] of a National Collection of [illegible] from central [illegible] by [illegible] reference to [illegible] Systems [illegible] Data [illegible] to Machine [illegible] connected to [illegible] time sharing [illegible] in FORTRAN. There is considerable scope for [illegible] of the [illegible] storage and [illegible] to [illegible] alternative [illegible].

[illegible] with five years post-[illegible] experience may be appointed [illegible] Scientist Grade.

[illegible] scale £2,991-[illegible] London Weighting. [illegible] scale £3,198-£4,898 + [illegible] Weighting or Senior Scientific [illegible] £5,451-£6,837 + [illegible] Weighting.

Applications to: Personnel Officer, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. Tel 01-205 7041 — for a more detailed job description (Dr L. R. Hill [illegible] 47)

UNIVERSITY OF ST ANDREWS

Secretary's Department

SYSTEMS ANALYST/ PROGRAMMER

[illegible] are invited from graduates [illegible] computing experience [illegible] Systems Analyst [illegible] work on the development [illegible] student record system [illegible] will operate on a CTL [illegible].

[illegible] posts according [illegible] experience on the [illegible] 1A scale £3381 [illegible] under USS.

Applications, with the names of two referees, should be sent by 15th December 1978 to the Establishments Officer, the University, College Gate, St Andrews, Fife, from whom further particulars may be obtained.

The POLYTECHNIC WOLVERHAMPTON

Computer Centre

The Polytechnic is establishing a Computer Centre to be responsible for computing facilities and services. A large dual PRIME 500 interactive system supporting initially 64 terminals and a batch load will replace the existing ICL 1903A service in mid 1979. Additional computer staff are required and applications are invited for the posts of:

Applications Manager

£6342 - £7044 per annum including supplement.
To be responsible for the applications programming group. Candidates should have good qualifications and substantial experience of project management and control and of the needs of computer users in an educational or business and industrial environment.

Senior Programmers Systems Analysts

£5232 - £6060 per annum including supplement.
Candidates should have several years experience in at least one of the scientific, commercial, administrative, systems programming or user support areas, and be able to undertake programing systems design and development, and coordinate small project teams.

Programmers

£3732 - £5073 per annum including supplement.
Applicants should have a sound computing background and experience in applications or systems programming.
Further details and application forms from Personnel, The Polytechnic, Wolverhampton WV1 1LY.
Telephone — Wolverhampton 27371.

SHEFFIELD CITY POLYTECHNIC
DEPARTMENT OF COMPUTER STUDIES

SL/LII IN DATA PROCESSING

Salary Scale:
Senior Lecturer £6051-£7527
Lecturer II £4101-£5558

The successful candidate will teach data processing on degree and diploma courses in Computer Studies and will assist the industrial training tutor in the placement in industry of sandwich students. Applicants should possess a relevant qualification and have had some experience in industry.

LECTURER II IN DATA PROCESSING

Salary Scale: £4101-£5558

The successful applicant will be required to teach data processing on a wide range of Polytechnic courses, including the department's specialist degree and diploma courses in Computer Studies.
Ideally, candidates will have a good degree in a relevant area, as well as having substantial applicable industrial experience. In any case, knowledge of current theory and practice of data processing is essential.

Requests for an application form in writing only please to the Recruitment Section of the Personnel Department, Sheffield City Polytechnic (Dept. CW), Halfords House, Fitzalan Square, Sheffield S1 2BB. Completed forms should be returned by 15th December, 1978.

CHELSEA COLLEGE
University of London

PROGRAMMER

required to work in the Information Processing Group of the Computing Unit, to develop and support applications mainly written in COBOL and BASIC. Education to 'A' level standard, or equivalent computing experience will be required. Salary scale — £3468-£4107 or £4107-£4748 per annum (inclusive) depending on qualifications and experience.

Further details and application forms from the Secretary, Computing Centre, Chelsea College, Pulton Place, Fulham Broadway, London SW6 5PR Tel 01-736 1244.

PROGRAMMERS SENIOR PROGRAMMERS & SYSTEMS PROGRAMMERS (SCIENTIFIC)

Long contracts in France/Switzerland. £12,600-£18,500.

BENNEY ELECTRONICS
Ferndown Industrial Estate
Dorset
Tel: 0202-89 2130

IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY
(University of London)

COMPUTER PROGRAMMER

(Part-Time)

A vacancy for a part-time (18 and a half hours per week negotiable) Computer Programmer has arisen at the Imperial College Field Station at Silwood Park, Ascot. The successful applicant will be expected to advise research students on the use of terminals and programme packages, and also to develop programmes and write instructions for their general use. Salary will be pro rata on the scale £3384 to £4133 per annum.

Applications should be made to Professor T. R. E. Southwood, Imperial College, Field Station, Silwood Park, Ascot, Berks. (Tel: 0990 23911), before 1 January, 1979.

UNIVERSITY OF DUNDEE
Department of Electrical Engineering and Electronics
Applications are invited for a vacancy for an

ELECTRONICS TECHNICIAN

to participate in the development and construction of specialised electronic equipment for research and teaching in the above department.
Applicants should have an appropriate ONC or equivalent qualification and considerable relevant practical experience preferably including some in micro-computers and micro-processors. Candidates with at least seven years experience will be considered for appointment at Technician Grade 5 level at an appropriate point on the scale £3186-£3720 (under review).
Application forms may be obtained from the Establishments Office, The University, Dundee, DD1 4HN, and should be returned as soon as possible. Please quote Ref: EST/171/78 CW.

COUNTY TREASURER'S DEPARTMENT

Systems Analyst

Post T 255

Programmers

Posts T266, T 270

WE OFFER:-

1. Salary Grade AP 4/5 £4245 - £5073
2. A wide variety of developments
3. ICL 1904S 256K Main Frame
4. Real Time Systems
5. Data Base Developments
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7. General Terms and Conditions of Service appropriate in a large County Council

WE REQUIRE

Systems Analyst -
Preferably with a programming background who has experience in the design of commercial systems. Experienced commercial programmers who have had some insight in to systems work and now wish to concentrate on systems analysis will also be considered.

Programmers
With at least two years COBOL experience.

INTERESTED:-
Ken Rawcliffe or Stephen Ward will be pleased to supply further details if you phone Barnsley (0226) 86141 ext 342 or
Write for an application form to Chief Executive (Personnel),
South Yorkshire County Council, County Hall, Barnsley,
South Yorkshire, S70 2TN.

(Closing date is:- 13.12.78)

COMPUVAC COMPUTER SERVICES

P R O G R A M M E R S

SYSTEMS & PROGRAMMING

SNR. RPG2 PROG.	ANY EXP	2+ YRS EXP	c£6½K + O'SEA TRAVEL	CITY
COBOL PROGS.	IBM/370	2 YRS EXP	c£7000	C. LON
BASIC PROGS.	PDP11/RSTS	1½ YRS EXP	£6000	CITY
ASSEMBLER PROG.	IBM/378	1 YRS EXP	£5½K	S. LON
ALGOL PROGS.	MINIS	1½ YRS EXP	£5-5½K	N. LON
JNR. COBOL PROG.	ANY EXP	8 MONTHS EXP	£4½K	CITY

FOR DETAILS OF THESE AND MANY OTHER COMMERCIAL & SCIENTIFIC PROGRAMMING JOBS CALL US NOW FOR A FRIENDLY CHAT

O P E R A T O R S

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ICL				
GEORGE 2	S/LEADER	3 YRS EXP	£5000	W. LON
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VME/B	SENIOR OP	2 YRS EXP	£4600	W. LON
2904	OPERATOR	6 MTHS EXP	£3600	W. LON
IBM				
DOS/VS	SENIOR OP	2 YRS EXP	£5100	S. LON
OS/VS	SENIOR OP	2 YRS EXP	£4600	CITY
SYS1/3	OPS MANAGER	6 YRS EXP	£6000	S. LON
HONEYWELL				
GCOS	S/LEADER	4 YRS EXP	£5000	C. LON
UNIVAC				
EXEC8	SENIOR OP	1½ YRS EXP	£4800	C. LON
OS/3	OPERATOR	1 YRS EXP	£3800	N. LON

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IBM				
DOS	OPERATOR	1 YRS EXP	£4400	C. LON
OS/VS1	JNR OPS ANALYST	GOOD JCL EXP	£4000	[illegible]
DATA CONTROLLERS				
2 YRS EXP	GOOD DOS JCL		£4500	[illegible]
8 MONTHS EXP	SPLIT DATS		£3750	C. LON

This obviously is just a cross-section of our current job file, call us and discuss your next move.

01-248 6367 24 hour answering service

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ANALYSTS and PROGRAMMERS WHO'VE MADE IT

OR PROGRAMMERS WHO ARE GOING TO . . .!

Our client is a major electrical and electronic manufacturing group based in the Northern Home Counties, within easy reach of London. The systems and programming area is expanding again in order to keep pace with the ever-increasing growth of this successful and well-established company. Consequently, first career opportunities are being offered to systems analysts and senior programmers who wish to become analysts. There are also two vacancies for programmers who wish to further their technical support experience or move into that specialised area.

SYSTEMS ANALYSTS

Applications are invited from analysts, senior programmers and graduates with a sound programming background and the ability to specify programs. This position will involve systems design work.

In return for this expertise a salary of c. £6,850 p.a. is offered.

TECHNICAL SUPPORT PROGRAMMERS

Applications are invited from conscientious programmers with a minimum of one year's programming experience using PLAN. A knowledge of COBOL is desirable but not essential.

In return for these qualities a salary of c. £6,000 p.a. is offered.

Successful applicants will have the opportunity to further their technical experience, joining a small, friendly and yet highly professional team involved in a wide range of applications including the development of personnel and nominal ledger systems. This company has a policy whereby promotions are made from within wherever possible. Benefits are excellent and include 5 weeks' holiday after 3 years' service.

Further information and an application form contact Amanda Banks

TEL 01-439 3671

HEXAGON
computer services
[illegible] LONDON W1V [illegible]

TEESSIDE POLYTECHNIC
Computer Centre

The Computer Centre provides a computing service for the teaching, research and administrative work of the whole Polytechnic. It is equipped with a powerful Univac 1110 machine recently installed which will support over 80 terminals and an extensive range of graphics devices.

To support the new machine a number of additional posts have recently been established. Applications are now invited for the following posts which offer an opportunity to join a growing team engaged on a number of interesting developments.

PROJECTS MANAGER (Systems Software) New Post

£6,060-£6,702 (including supplements)

To lead a small team of Programmers/Analysts responsible for the maintenance, monitoring and enhancement of the Univac EXEC 8 Operating System and other systems software. In depth experience of operating systems for large computers essential.

PROJECTS MANAGER (Applications Programming) New Post

£6,060-£6,702 (including supplements)

To head a team of Programmers/Analysts responsible for providing and maintaining a wide range of applications software, including statistical and numerical packages, and engineering and database software, offering specialist advice on its use and supporting library and administrative computing. Broad experience of computer applications including technical computation is essential.

PROGRAMMER ANALYSTS/ SENIOR PROGRAMMER ANALYSTS

(New and Regraded Posts)
£3,732-£5,073 (Programmer Analysts — including supplements)
£5,232-£6,060 (Senior Programmer Analysts — including supplements)

Several posts are available. Candidates able to offer in depth specialist knowledge in one or other of the areas of the Centre's interests, including operating systems, graphical computing, computer communications, statistical and numerical computation, databases, technical writing and instruction and Library Data Processing will be particularly welcome. Appointments may be offered on the more senior grade to candidates with sufficient experience.

Candidates for the posts should possess a degree or similar level qualification in a suitable subject.

Application forms and further particulars from: **Assistant Secretary (Academic), Teesside Polytechnic, Borough Road, Middlesbrough, Cleveland TS1 3BA, to whom they should be returned by Friday, 29 December, 1978.**

COMPUTER RECRUITMENT DIVISION

SYSTEMS & PROGRAMMING

ICL COBOL TO £5,000 + Mortgage
A leading Merchant Bank offers outstanding opportunities for bright young programmers with one year's good Cobol experience. Excellent prospects for the right candidate.

COBOL £6,000
A West London based multi-national is currently seeking programmers with eighteen months experience. Mainframe is immaterial as full re-training given.

IBM DOS COBOL £5,500
Excellent prospects for a go-ahead programmer with eighteen months' experience on 370 hardware, excellent perks.

SYS. MANAGER TO £7,800
An experienced Ops. Manager with the ability to diagnose faults and motivate staff will find a new challenge in this installation. Phone for details.

ANALYST/PROGRAMMER TO £7,500
One of the City's foremost Insurance companies requires a programmer/analyst, three years' experience on IBM System 3. A knowledge of the Insurance business, would be an advantage. Top prospects.

MINI SPECIALIST BASIC PROG TO £8,000
Work out of London and capitalise on your experience with this Surrey-based company who are looking for people with a minimum of one year's DEC/PDP experience.

OPERATORS

OPERATOR, £4,500 NCR CENTURY
A progressive London company operating under B3, are looking for a Century or Criterion Operator with 18 months' experience. Good prospects and excellent perks. Ref 538

SNR. OPERATOR, £4,620 IBM 370
An Operator with 18 months' OOS Power experience is required by a West London Company in the music industry. They operate on a 3-shift system and offer excellent prospects. Ref. 565.

SHIFT SUPERVISOR, £5,432 IBM 370
A world-wide organisation based near Croydon are offering excellent rewards for people with two years' DOS/VS Power/VS experience. Ref. 504

OPERATORS ICL 1903T £4,750
Get a bird this Christmas, that's just one of the perks offered by this West London Company — a free turkey, plus free lunches and four weeks' hols. All they ask is that you should have sound ICL 1900 experience under GII+. Ref 132.

TWO SHIFT LEADERS, ICL 1902T £5,000
Operating under GII, this North London Co. offer you flexi-hours, free meals, 4 weeks' hols and a cheap mortgage. Ref. 288.

ICL OPERATORS 2904, 2903, 1903 UP TO £4,700
With GI+ GII and GIII experience, in Central London and the City. Excellent benefits for junior and senior ops.

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ST. LOYE'S COLLEGE FOR TRAINING THE DISABLED FOR COMMERCE AND INDUSTRY
EXETER

DATA PREPARATION INSTRUCTOR

required. Full time position to train operators to commercial standards and speeds on key-operated data entry equipment, including direct entry, punched card and paper tape.
Excellent Pension Scheme and canteen. Holidays: Over 4 weeks' leave a year. Salary currently starting at £4,049 per annum, rising by four annual increments to £4,860 per annum.
Written applications giving names and addresses of two referees to the Principal.

MINI COMPUTER PROGRAMMERS

Can you write operating systems?

Do you have experience of any mini computer assembly language and of an Algol like language?

If so please phone Owen Rees on Cambridge (0223) 312347 or write to him at
Toltec Data Ltd.
24 Thompsons Lane
Cambridge CB5 8AQ

BURROUGHS L9000 OPERATOR

Required for leading West London Auctioneers and Estate Agents, based in W.12. Salary negotiable.

Please contact Will-motts, 01-773 444 Ref. TMHM for further details.

HARDWARE ENGINEERS

Due to expansion a number of experienced Computer System Engineers are required for installation and maintenance work in the Middle East. Engineering operations are based in Damascus, Syria.
Preference will be given to applicants with Interdata, ICL (Singer), or other minicomputer experience.
The company is the computer division of a large consumer and business electronics organisation. It holds distributorship and marketing rights for some of the leading computer products in the world.
Salaries are from £8,500 sterling (with low taxation) depending on experience.
Contracts will be for an initial period of two years.
Free furnished flats are provided.
Two annual return tickets to the U.K. will also be supplied.
Apply, in writing, with detailed C.V. to: The Personnel Department, Microelectro Developments International Ltd., 87-93 Wellington Street, Luton, Beds. LU1 5AF.

NEW YEAR NEW JOB!

A SPECIAL TWO-PART FEATURE

In January 4 & 11 issues of Computer Weekly a special two-part feature will be published designed to give our views and comments on the '79 job outlook.

To advertise in this feature contact:
NANNETTE GIBBS 01-261 8174
or MARK WILLIAMS 01-261 8019

April 1-54

There's more scope for your skills at Dataskil

Reading System Centre

Dataskil have increased their turnover by 100% over the past two years, and their staff by 50% — and growth shows no signs of slackening. Here at the System Centre we supply the company's computing needs using a complete range of ICL equipment. We now need more people to help us handle our increased workload. Joining us now and working in an expanding and successful organisation really will give you more scope to develop your skills, and above all, rapid career progression.

Technical Support Programmers

up to £5,500

If you are an experienced applications programmer with a keen interest in exploiting the facilities of a large operating system, then we would like to hear from you. You need to have at least two years' programming experience in one or more of COBOL, FORTRAN or ALGOL, on an ICL Computer System. We will give you extensive training in the exploitation of VME/B at the Reading System Centre, where we have a large ICL 2970 supporting a varied communications network.

The work demands the ability to absorb new information quickly, and a keen interest in solving users and systems problems. For an application form or further details, please telephone Nigel Ramsbottom on Reading (0734) 582041, ext. 66 during the day, or Reading 472353 in the evenings. Ref. CW1112/A.

1900 & Small Systems Operators

£3,000-£5,000 + 20% shift allowance

We are looking for people to assist in the supply of 1900 services to both Dataskil and external customers. We are currently using a 1904S, 1903A and 2904, all running a varied selection of operating systems including George 3, and we are due to add a 2960 in 1979. You should have some experience of 1900 machines and operating systems, especially George 3, as well as a real desire to develop your career. You will have the opportunity to get involved in the technical support activities —.with the chance of moving permanently into this area.

If you're interested and would like to know more about the jobs, then contact Roger Tinson at the Reading System Centre, Reading (0734) 582041 or Reading 690986 during the evening. Ref. CW1112/B.

If it's inconvenient to phone you may apply for either of these jobs by writing to: Gareth Bonnett-Coles, Dataskil Limited, 118-128 London Street, Reading, Berks, RG1 4SU.

Please quote the appropriate reference.

ICL Dataskil

The Computer Professionals

Technical Author

IBM United Kingdom Laboratories Limited are looking for a Technical Author, male or female, to join its Technical Documentation department. The work involves the preparation of user and maintenance manuals for the range of products under development in our Laboratories at Hursley Park, near Winchester, Hants.

You will probably have one of the following backgrounds:

- Experience in technical writing on computers or other complex electronic equipment.
- Experience in computer engineering with an aptitude for communicating in writing.
- A degree in *Information Science or a similar formal qualification.*

An attractive salary will be negotiated in line with experience and potential. As well as a substantial employee benefits package which includes a non-contributory pension scheme and free life assurance, we offer generous assistance with relocation expenses where appropriate, and variable working hours.

If you are interested, please telephone Mike Shute, Personnel Officer, on Winchester (0962) 4433 ext. 6232 for an application form, or write to him with full career details at IBM United Kingdom Laboratories Limited, Hursley Park, Winchester, Hants, quoting ref. [illegible]

IBM

COMPUTER OPERATIONS SUPERVISOR

A SOMEWHAT MISLEADING TITLE. What is required is a person with MANAGEMENT FLAIR, the ability to motivate people, the understanding required to identify with management objectives and to work well with all levels of fellow professionals.

A thorough understanding of ICL hardware and on-line communications is essential. The installation is based around an ICL 2903/30, operating in both real-time and batch modes.

The company consider this a vitally important position, and as such offer a salary range starting at £5,000, but with considerable flexibility over this figure for the suitably motivated applicant.

Benefits include an attractive shift system, and the travel concessions normally expected of a major tour operator.

REF: DW 934

D. P. RECRUITMENT LTD.,

KENT HOUSE, 87 REGENT STREET, LONDON W1R 7HF.

TEL: 01-437 2062/3/4 (24-HOUR ANSAPHONE)

UNIVERSITY OF EAST ANGLIA
NORWICH

MANAGER COMPUTING SUPPORT STAFF

in the School of Computing Studies and Accountancy. Applications are invited from candidates having experience of technical management or project leadership for this new post tenable from January, 1979, or as soon as possible thereafter which arises from further expansion in the School. Preference will be given to candidates having specialist knowledge in computer systems software, computer applications or maintenance of computer hardware. The School currently has six staff who provide computing support for academic staff in areas relating to teaching and research. The initial salary will be within the range £6128 to £7754 on the scale 1A/11 plus USS benefits.

Applications (one copy only) giving full particulars of qualifications and experience, and exact date of birth, together with the names and addresses of three persons to whom reference may be made, should be lodged with the Establishment Officer, University of East Anglia, Norwich NR4 7TJ, from whom further particulars may be obtained (telephone 0603 56161 ext 2120) as soon as possible and not later than Tuesday, 19 December, 1978. In naming three referees you are particularly requested to give only the names of those who can immediately be approached by the University. *No form of applications are issued.*

Systems Engineers

MEMOREX

Memorex UK Ltd., [illegible] computer peripheral market [illegible] growth.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Write or telephone reversing charges (UK only) [illegible] Memorex UK Ltd., [illegible] Hounslow West, Middlesex. Tel. 01-570 [illegible]

UNIVERSITY OF GLASGOW
COMPUTING SERVICE

Administrative Data Processing Group

PROGRAMMER

Applications are invited from suitably qualified persons for the post of Programmer within the Administrative Data Processing Group of the University's Computing Service. The primary function of the Group is to provide a student records data processing service, but a large variety of *programming* applications are in fact involved. Processing is currently carried out on an IBM 370/168 computer at Newcastle, but *all data and programs are about to* be transferred to the University's own new ICL 2976 system. The person appointed would be involved both in this transfer operation *and in new* programming applications which are planned.

Applicants should be in the possession of a University degree or equivalent. Preference will be given to those with at least 2 years' experience of programming or analysis in a data processing environment. Salary will be in the range £3384-£5658 (interim) of the scales for Other Related Staff, with initial *placement* dependent upon age, qualifications and experience.

Applications (6 copies), giving the names and addresses of three referees, should be lodged with the Secretary of the University Court (Room 16), University of Glasgow, Glasgow G12 8QQ, not later than 8th December, 1978.

In reply please quote Ref. No. 4238/JP.

MIDLAND RECRUITMENT FEATURE

Advertisers are reminded that the next Computer Weekly area feature will be published on December 7 and will highlight career opportunities in the Midlands.

Space reservations should be made as soon as possible to:

Basil McGowan — Birmingham — 021-356 4836
Eddie Farrell — London — 01-261 8097

Copy Deadline: PM Friday before.

COMPUTER WEEKLY

THE INDUSTRY'S WIDEST READ AND MOST REQUESTED NEWSPAPER

SOFTWARE/HARDWARE ENGINEERS

C. London **to £7,500**

Vacancies exist for engineers within this technical consultancy specialising in advanced software/hardware applications to develop microprocessor applications in industrial/commercial areas. Digital systems, micro and LSI experience is preferred — including design, building, testing and fault finding.

Ref. 48/1

BUSINESS SYSTEMS MANAGER

London **to £9,000 + Car**

An opportunity to establish "management services" type facilities to a group providing services to professional organisations. Experience: Degree level in business studies or accountancy qualification + 6 years' administration systems design or management involving application of computers + 2 years O & M analysis.

HAVEN HAVEN HAVEN HAVEN HAV

ANALYST/PROGRAMMERS

City **to £7,500**

An opportunity for Analyst/Programmers with some B1700, 2700 or 3700 and COBOL proficiency to join a progressive Software House/Bureau specialising in Burroughs and PDP systems work on commercial/financial applications. Successful candidates will probably have 3-4 years' experience in data processing and will be capable of working in a project team to fixed time scales.

Ref. 48/3

SOFTWARE DESIGNERS

Holland **to £14,000**

This division of a diverse American Service company specialising in advanced system software and on-line projects are looking for Designers with experience in the design/development of compilers, operating systems and interactive facilities. A minimum of 10 years' experience, the ability to design/specify software and develop basic concepts for a new range Of European minicomputer business machines.

Ref. 48/4

SENIOR CONSULTANT

Munich **A1 Neg.**

A well-established Technical Services company based in this country require a Senior Consultant on a one-year renewable contract in Munich to advise on conversion aids from IBM system 3 to Siements 7,700 range. Applicants will ideally have IBM 370 software background, 2 years + software development experience, and an understanding of German.

Ref. 48/5

SENIOR ANALYST

C. London **£6,500 + Car +**

Small business machine/intelligent terminal manufacturer requires a Senior Analyst to work on a new range of *minis developing* software/commercial systems. Whilst a knowledge of PLI and a mini *background gained with a manufacturer are preferable,* in-depth experience of communications is essential. Through involvement with clients lies the opportunity to progress into sales.

Ref. 48/6

HAVEN HAVEN HAVEN HAVEN HAV

SYSTEMS ANALYST

City **to £6,700**

Applications are invited for the position of Systems Analyst with an international insurance organisation. Candidates will have 3-4 years' DP experience with a programming background in an insurance/financial environment. The languages COBOL and Assembler are preferable for their IBM 370 under DOS/VS operating system. Company benefits include free life assurance, pension scheme, BUPA and a subsidised canteen. Relocation expenses will be considered.

Ref. 48/7

ANALYST/PROGRAMMERS

London **to £7,500**

Our clients providing telecommunications network services overseas on an IBM 370 OS/VS2 are looking for creative men and women to enhance/amend/update the computer model to reflect the changing nature of the telecommunications network. A Degree or professional qualification, good COBOL, and an ability to work to tight schedules will ensure an interview within one week of application.

Ref. 48/8

INFORMATIX UNITED KINGDOM AND OVERSEAS INDEX

Haven Informatix Limited

24 Grays Inn Road London WC1X 8HR Telephone 01-831 6055 Telex 299539 HAVEN G

ANALYST PROGRAMMERS Circa £6,000

PROGRAMMERS — Circa £5,000

BIRMINGHAM

The Birmingham Post and Mail Ltd. have developed an advanced computerised newspaper system. This has now been in use for the past 2½ years.

We are now entering a further development phase to increase the use of a new technology providing an ideal opportunity for self-motivated Analyst Programmers/Programmers wishing to move into this advanced area of computing. The development include upgrading from ICL 1902Ts to ICL 2956 new range machines.

The positions call for men or women with technical aptitudes, working on their own initiative, having the ability to make a creative contribution to the further extension of computing within the Company.

Ideal candidates will have between 3-6 years' experience in either Plan or Cobol on ICL equipment. Assistance will be given with relocation expenses.

If you would like to discuss these appointments, telephone T. Austin, Data Processing Manager, on 021-236 3366, Ext. 540, or

THE BIRMINGHAM POST
BIRMINGHAM EVENING MAIL
SUNDAY MERCURY
SANDWELL EVENING MAIL

Please apply in writing
for an application form to:
MRS. S. M. JONES, STAFF MANAGER,
THE BIRMINGHAM POST & MAIL LTD.,
P.O BOX 18, 28 COLMORE CIRCUS,
BIRMINGHAM B4 6AX.

MICROPROCESSOR APPLICATIONS

BNF Metals Technology Centre, a large international R&D organisation in the metals industry, is extending its exploitation of microprocessor devices to further applications including process monitoring and control, automatic safety checks, machine operation sequencing and production control in non-ferrous works. A well-qualified and experienced technologist is required to explore potential applications, design appropriate hardware/software systems and pursue resulting development projects. Backed by other BNF staff in engineering design, control circuitry and system specification, candidates, male or female, must be capable of acting on their own up to top management levels in initiating and undertaking projects in various parts of industry.

We offer excellent prospects, competitive salary dependent on experience and qualifications and a subsidised staff restaurant. Write for application form quoting ref. AC15 (C.W.) to The Secretary at the address below:

Grove Laboratories,
Denchworth Road, Wantage
Oxfordshire OX12 9BJ

BRISTOL

SOUTH WEST SOUTH WALES

BRISTOL	
Sales/Systems Support (OEM)	£12K + Car + Mortgage
Snr Anal Eng	
Analy/Prog (Cobol)	£6,000
Systems Anal (ICL)	£8,000
Snr Prog (ICL)	£5,500+
Realtime/Mini Progs.	£6-£7,000
Prog (numerous)	£ neg.
CARDIFF	
Prog (Cobol)	to £5,500
Anal/Progs (IBM)	to £5,500
Anal/Progs (RPG2)	to £6,000
Progs (BASIC/ASSEMBLER	to £4,500
SWANSEA	
Snr Anal (ICL)	to £8,000
Snr Prog (ICL)	to £5,500
Syst Anal (ICL)	to £6,000
Prog (Cobol)	£4-£5,000
WILTSHIRE	
Snr Anal/Prog (RPG2)	to £5,750
Prog/Anal (IBM)	to £7,200
Syst Anal (ISM)	to £8,000
Pro Mgrs (Realtime)	to £10,000
Progrs (Ass)	to £8,000
Sys Des (Software)	to £8,000

GLOUCESTER	
Snr Prog/Analy (RPG2)	to £5,750
Realtime/Mini Progs	to £8,000
Syst Des	to £6,000
Snr Prog (ICL)	to £5,500
Syst Anal (ICL)	to £5,500
Prog (Cobol)	to £5,000
HANTS/DORSET	
Snr Progs (Minis)	to £6,000
Snr Prog (ICL)	£5,200
Anal/Prog (ICL)	£5,000
Anal/prog (RPG2)	£6,000
Pro Lead (NCR)	to £5,000
SOMERSET	
Snr Anal/Prog (60/30)	to £5,500
Prog (GIII)	to £5,500
Prog (RPG2)	to £5,000
Realtime Prog	to £6,000
DEVON/CORNWALL	
Anal/Prog (RPG2)	to £6,000
Sys Anal (ICL)	to £5,000
Anal/Prog (Cobol)	to £6,000
Progs (Cobol)	to £4,500
Sys Prog	to £6,500
Prog (PL/1)	£5,000

For further information about any of the above vacancies phone or write to Keith Dawe or Chris Wilson. When writing please enclose your own C.V.

Sanderson 9A Princess Victoria Street Clifton Bristol
EXECUTIVE RECRUITMENT
TELEPHONE 0272 39302

BRITISH GAS

Share in the future of Britain's Gas

SEGAS

SENIOR PROGRAMMERS

Up to £6500 **CROYDON**

To maintain the impetus within our project teams we need senior programmers with a minimum of 3 years' COBOL experience coupled with a knowledge of OS/VS1, Assembler and CICS.

Our hardware consists of an IBM 370/148 and a recently-installed IBM 30/32. Projects are both batch and TP under OS/VS1, CICS and VTAM. A broad range of commercial systems are in operation or under preparation and the successful applicants can be sure of an interesting and stimulating environment.

- ★ Good working conditions
- ★ Generous holidays
- ★ Sick pay, pension and insurance schemes
- ★ Sports and social facilities

Write, giving full details, within 7 days, and quoting ref. O.4807, to:

Personnel Manager
Segas
Segas House
Katharine Street
Croydon, CR9 1JU

SEGAS

Systems Manager

c.£8,000+car West Country

Our Computer and Administration Centre, based at Taunton, Somerset, provides the Debenham Group with a comprehensive range of management and financial services.

We are looking for a highly competent Systems Manager to be responsible to the Systems Development Manager for the provision and development of Computer Systems in a major business area of the Group's activities. Applicants, male or female, should have experience of planning and controlling large scale systems projects.

Please write or telephone for an application form, together with a copy of the job description and details of the excellent company benefits, from:–

Mrs. Elizabeth Kennedy,
Personnel Executive,
Debenhams Limited,
1 Welbeck Street, London W1A 1DF.
Tel: 01-408 4444 Ext. 544/730.

Debenhams

KBS Computer Services
[illegible]
[illegible] Street,
[illegible] 051 236 7711

Top Opportunities

ANALYST PROGRAMMER TO £5,400, BIRMINGHAM REF. LL78141
Our client requires a person with experience in RPG and preferably with experience of [illegible] Systems. An ICL 1900 is used in a batch environment with plans to develop an on-line system.

ANALYST PROGRAMMER c £5,000, LIVERPOOL REF. LL78138
Our client requires a person to develop systems on an IBM System 3. You should have between 3 and 5 years' programming experience using RPG, and have had some systems design experience. Four weeks' holidays and discount on company products are among the benefits of joining this company.

ANALYST PROGRAMMER c £6,000, CHESHIRE REF. LL78130
Would you like to work in an expanding bureau environment? Our client is a subsidiary of a major firm and would like to hear from you if you have a minimum of two years' programming experience using Assembler. You should also have some experience of systems. Because customer contact is necessary you must have a current driving licence. A bonus scheme is in operation.

ANALYST PROGRAMMER TO £6,000, BIRMINGHAM REF. LL78140
A time-sharing bureau requires a person with 2/3 years' programming experience in COBOL, PL1 or RPG. Systems experience [illegible] and experience of [illegible].

SYSTEMS ANALYSTS TO £7,500, LONDON REF. KBV6
We require experienced systems Analysts who have the ability to pass on their experience to others, to work as lecturers on our systems courses. Modern techniques including [illegible] are used.

Ring: 051-236 7711 (24 hours)
Ring: 01-231 3459 (24 hours)

UNIVERSITY OF ST. ANDREWS

Administrative and Library Computer Unit

Programmer/Analyst

A suitably qualified and experienced Programmer/Analyst is required to join a small team working on new systems for University Administration. The Unit has its own CTL 8050 machine and is writing on-line systems in CORAL and TAD for three main applications – staff and student information, finance, and library circulation control.

Applicants should have substantial experience in applied computing and familiarity with business or information systems. A relevant degree may also be an advantage. It is expected that initially the successful applicant will be working mainly on Library Circulation Control systems development.

Salary is on the scale 1A, £3883 to £6565 (under review). Superannuation under U.S.S.

Further particulars may be obtained from the Establishments Officer, the University, St Andrews, Fife, KY16 9AJ, to whom completed applications, with the names of two referees, should be returned by 15th December, 1978.

WANTED

APPLICATIONS ENGINEERS AND TEST TECHNICIANS

to work with computer peripheral and instrumentation products, including floppy disk drives, data terminals, tape cassette drives and analog recording instruments.

MFE, a prominent U.S. supplier of these products is opening a European Manufacturing and Marketing Headquarters near Edinburgh.

Successful applicants will receive 2 or 3 months' training in the U.S.A. early in 1979 and will be relocated in Scotland, if necessary. Housing in Livingston New Town is available.

Interviews will be held in London immediately following the Compec Exhibition on December 8 & 9.

Applications should be made to:
c/o Mr. Ellis Conway
MFE LIMITED
c/o Kondo Electronic Systems
South Hampshire Trading Estate
Totton, Southampton
Telephone: 042-16 8825

COMPUTER ENGINEERS

Our planned expansion provides sound opportunities for experienced engineers in the following areas.

SHIPLEY (on site)
LIVERPOOL
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NORTH WEST LONDON
LUTON
EAST ANGLIA (Ipswich-Norwich)
CENTRAL LONDON
SOUTH EAST LONDON
SOUTH WEST LONDON
BRISTOL
SWANSEA (on site)
SWANSEA

We require people, male or female, who have either:

A minimum of two years' experience on computing equipment and associated peripherals or formal electronic qualifications such as HNC or ONC plus digital experience, or relevant HM Forces experience.

Redifon offer attractive salaries, overtime and company car, plus normal fringe benefits associated with an expanding, progressive company.

Apply to: Marion Barnes, REDIFON COMPUTERS LIMITED
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Telephone: Crawley (0293) 31211 ext 278

World leaders in data entry

REDIFON
COMPUTERS LIMITED

PROGRAMMERS SENIOR PROGRAMMERS

GET SET FOR '79

Leeds **£4250 to £5250**

Our client a major computer user wishes to recruit additional programming staff with at least 12 months COBOL experience on any mainframe.

The work is truly stimulating including real-time and database applications and the opportunities for advancement are outstanding.

Rewards to successful candidates will be:

- * Starting salary from £4250 upwards depending on seniority.
- * First class benefits.
- * Relocation expenses.
- * Continuous training in advanced techniques.

Contact Ivor Norton quoting Ref c. 78102 to arrange a local interview near your home or place of work.

Ivor Norton Management Services Ltd
Recruitment Consulting Division
62 Shaftesbury Avenue London W1V 7DE 01-734 0062 (24 hour answering service) P.O. Box 63 Copthall Tower House Harrogate HG1 1TS Tel. Harrogate 66628

LONDON SCHOOL OF ECONOMICS
COMPUTER SERVICES UNIT

ECONOMETRIC PROGRAMMER

Required to assist social scientists in the use of econometric and computer techniques for teaching and research purposes. Facilities available for use include large CDC, IBM and ICL computers and PDP 11 and Modcomp minicomputers. The post offers a challenging position for an enthusiastic person, with considerable scope for initiative in the use of computers in Economics. Applicants should have an M.Sc. degree in Econometrics or Statistics, some experience of writing FORTRAN programs, and the ability to cope sympathetically with users' problems. Salary, according to age and experience, will be in the range £3864-£6732. Application forms, returnable by 20 December, 1978, should be obtained from the Assistant Personnel Officer, LSE, Houghton Street, WC2A 2AE 405 7686, Ext. 724

CHELSEA COLLEGE
University of London

SENIOR COMPUTER OPERATOR

(Two Shifts)

required to lead shifts operating local and remote batch services and multiple access interactive machines. The College Computer Centre operates a newly installed Harris 125 interactive computer for 18 terminals (the first in a UK university) under the VULCAN operating system. An Elliott 4130 mainframe computer with batch and up to 18 interactive terminals, front-ended by a PDP11/40 which also handles an RJE link to University of London CDC computers, is the established service machine. Data communications are handled via a network controlled by the Gandalf PACX3. A responsible and well educated person is sought with O-level Maths and English or minimum and preferably a technical background. Conditions of appointment include a 5-day week, 4 weeks holiday plus one week at both Christmas and Easter and salary to £4,600 inclusive. Application forms and informal interviews by arrangement with Secretary, Computer Centre, Chelsea College (University of London), Pulton Place, Fulham Broadway, London SW6. Telephone 736 1244

Data Processing Operations Supervisor

Saudi Arabia

at least £22,000 tax free per contract

Lockheed Aircraft International are responsible for several major contracts throughout Saudi Arabia and computers play a major role in the recruiting and generation of information vital to their effective administration.

A supervisor is now required to be responsible for all aspects of ADP operations including design of systems and supervising analysts, programmers and operators.

The position demands experience of LEC or IBM System III with RPG II programming. ADP experience in a financial environment would be particularly desirable.

Total earnings for a two year contract will be at least £22,000 tax free including bonus and cost of living allowance. A generous benefits package includes:–

- Three paid leave periods with three free flights home to the UK annually
- Free food, laundry and bachelor accommodation
- Free medical care and life insurance
- Good recreational facilities

There are excellent prospects of employment beyond the initial contract period.

IAL

Write with details of experience quoting Ref 897 to the Senior Recruitment Officer, IAL, Aeradio House, Hayes Road, Southall, Middlesex. Telephone: 01-574 5000.

LONDON BOROUGH OF HAVERING
HOUSING DEPARTMENT

SENIOR HOUSING ASSISTANT

(Computer Operations)

AP5 – £5,058 to £5,358 inclusive

Required to control all operational aspects of the Housing Department's computer. The successful applicant will supervise data preparation, computer operations, be responsible to an Assistant Housing Manager for work scheduling. A Digital PDP 11/40 Computer with VDUs and a terminal network of Olivetti TC 800 receipting machines is in operation.

Starting salary will be dependent on age, qualifications and experience.

Application forms and further details from the Housing Manager, Mercury House, Mercury Gardens, Romford RM1 3DT. Tel: Romford 46040, Ext. 428. Closing date 15th December, 1978.

VIDECOM

(Henley-on-Thames)

VIDECOM LTD are manufacturers of the world's first multi-host computer terminal facility with an installed base worldwide.

Due to continued rapid expansion we urgently require experienced

PROGRAMMERS

Experience in Assembler level and minicomputer programming preferred and evidence of successful programming is needed for senior posts.

Based at the Company's Headquarters at Henley-on-Thames these posts offer a unique opportunity to work on design and development of software for this exciting new communications equipment and offer excellent career advancement prospects.

Salary is negotiable, depending upon background and experience and conditions include all benefits normally associated with a successful international company.

Write, giving brief career details (including present salary) to Miss H. Barker

VIDECOM LIMITED NEWTOWN ESTATE READING ROAD HENLEY-ON-THAMES [illegible]

LIVERPOOL POLYTECHNIC
Department of Mathematics

SENIOR PROGRAMMER GRADE T4

(2 posts)

Qualified, experienced programmers to work with a team providing support to the Polytechnic teaching, research and administrative users of the Computer: 1904A 64K disc, tape system. [illegible] the majority user work is COBOL, FORTRAN and PLAN, together with packages of various types. A knowledge of ALGOL and/or ALGOL 68 and experience in scientific computational problems would be an advantage. Salary scale: £3,833-£4,320 + £212 p.a.

Application forms and further particulars are available from the Personnel Office, Liverpool Polytechnic, Richmond House, 1 Rumford Place, Liverpool [illegible], Tel: 051-227 3581, Ext. 43. [illegible]

One programme that's not moving wavelength

Because we're on the right wavelength already, at Swanley, Kent.

Our programme of rapid expansion means interesting, varied and rewarding development work and a deep involvement for analysts and programmers at the very nucleus of our expanding group operation.

The International Group with 20,000 employees means many things. It means the Superstore division with 8 Superstores already in existence and many more planned for the future. It means recent acquisitions like Wallis Supermarkets and Alliance Wholesale Grocers. It also means Kearley & Tonge, one of the largest catering distributors and *Pricerite*, opening stores throughout the country. And of course, there are the many large and small International Supermarkets.

For every one of these – and our other future plans – we will need the expertise and knowledge to devise the variety of systems and programmes for our many operations. This will mean visits to new locations and a perpetual source of new and exciting projects to get immersed in.

To handle this expansion programme, we are building up our team of programmers and analysts at Swanley, Kent.

The hardware consists of an IBM 370/145 512K operating under DOS/POWER/CICS/VS with 40 VDUs, using the latest stock control package INFOREM. And future installations include on-line IBM Series 1, Minis and IBM System 34. A knowledge of COBOL Language would be a distinct advantage.

Programmers to £6000 pa.
Ideally we would like to hear from programmers who see themselves as analysts in a few years. But if you have about two years' experience of programming and feel ready to take on new responsibilities, we would like to hear from you.

Analysts £6500 pa.
You will be involved in many interesting areas of analysis and be required to design systems for the entire network of the International Group. This will mean visits to a wide variety of locations from 32,000 sq. ft. superstores to busy quick turn-round depots.

Here's a unique opportunity to gain valuable experience with International in a lively and friendly atmosphere. Find out more. Contact our Personnel Officer, Joan Leigh at, International Stores, Goldsel Road, Swanley, Kent. Tel: Swanley 65533.

Our programme at International is one of expansion. It's a programme that's on the right wavelength – YOUR WAVELENGTH

Member of BAT
INTERNATIONAL

Applic 1:54

COBOL Programmers

Let's talk about success -yours and ours!

There's a lot we could say about the areas of computing in which we lead the world – large-scale computers, computer peripherals, computer consumables, computer-based education and, of course, computer services. However, we recognise that the success of a company is only relevant to the employee when it directly effects his or her career and financial situation.

When we talk about success we refer to facts like our commercial systems and programming department having expanded from 17 to 35 within the last year. Three new management positions have been created and existing staff have been promoted within the same period. Expansion has necessitated the installation of an IBM 3031. This, and many more employee opportunities to follow, is the result of our rapid and continuing growth.

Ours is not run-of-the-mill programming, it is stimulating work involving all aspects of industry and commerce. Personal progress is not left to chance either, ongoing education is a commitment at Control Data, not a rumour.

So if you really care about your future, and have more than two years experience of Cobol (any computer!), wish to work in the LONDON area and a salary range of up to

£7,000

matches your immediate requirements, contact us right away.

Success could be as far away as your telephone!

CONTROL DATA

MORE THAN A COMPUTER COMPANY

Please supply your career details to:
Caroline Cunnaheer, Reference DP 1178, SMS Sales and Marketing
Services Ltd., 4 Tavistock Place, LONDON WC1H 9RA.
Telephone: 01-837-2281.

measurex

(IRELAND) LIMITED

A leading California-based manufacturer of digital computer-based measurement and control systems for the paper, pulping, energy management, rubber, plastics, and metal industries has the following vacancies within its Engineering Department located in Cork —

SOFTWARE SERVICES SUPERVISOR

Salary Range: £7,000-£9,000 p.a. depending on experience and qualifications.

Duties: To be responsible for all functions within the software laboratory and simulation areas associated with the Engineering Department.

The successful candidate will hold a good Engineering or Science degree with a Digital Computing and Computer Programming basis and have at least 5 years relevant experience. Knowledge of RSX-11M and/or HP DOS-M is essential.

SOFTWARE ENGINEERS

Salary Range: Up to £6,000 p.a.

Duties: To work on the development and manufacturing of computer based digital measurement and control systems in the Paper, Plastic, Rubber or Metal industries. To be involved in the installation and start-up phases of these systems.

The successful candidate will hold a good Engineering or Science degree with course work in Digital Computing and Computer Programming. Experience in assembly level programming of Real-Time Computer systems is highly desirable. Travel throughout Europe will be required.

There is a contributory pension scheme and a bonus scheme. Relocation allowances will be payable if appropriate.

Reply requesting application forms to: Engineering Department, Measurex (Ireland) Ltd., Mallow Road, Cork, Ireland.

THE PERFORMING RIGHT SOCIETY LIMITED

requires a

PROGRAMMING CONSULTANT

Reporting to the Systems and Programming Manager. His/her duties will include:

- Assisting Systems and Programming project team personnel in the development and maintenance of new and existing systems.
- Maintaining all standard utility programs and associated documentation.
- Scheduling program testing on the computer and vetting same on behalf of Systems & Programming personnel.
- Editing and maintaining the Programming Standards Manual, and any related literature.
- Appraisal of proprietary and other software for use on our ICL 2960/DME computer.

He/she should have extensive PLAN and disc experience and also possess a sound working knowledge of COBOL. Experience in communications application programming would be an advantage.

The salary will be within the range £4,500-£7,056 according to experience.

COBOL PROGRAMMERS

With 1-2 years' experience, to work in small and friendly teams of experienced programmer/analysts, using the Society's 2960/DME Computer.

The salary will be within the range £3,497 to £6,486 depending on experience with excellent opportunity for further advancement.

The Society offers a number of fringe benefits including LVs., flexitime, mortgage assistance (after a qualifying period), 4 weeks' holiday and a staff restaurant.

Please contact:

Personnel Manager
The Performing Right Society Limited
29/33 Berners Street, London W1P 4AA. 01-580 5544

Development Engineers/ Systems Programmers

Your career could really take off here in Kidsgrove, N. Staffs

£3600-£7200

We're at the forefront of computer technology, we're successful and we're growing fast. This continuing expansion means that we now need more Engineers and Programmers to work on the design of the following developments:

- Input/Output Controllers
- Communication System Controllers
- Intelligent Communication Terminals

The work involves:

- Logic design
- Network Systems Programming
- Intelligent Terminal Programming
- Microprocessor applications
- Programming of I/O Controllers

You may already be experienced or a recent graduate in electronics, computer science or other science discipline. We want to see you to tell you more.

Kidsgrove is situated in the pleasant rural setting of North Staffordshire. A wide variety of housing is available and we'll help you move.

Find out more, fix a date with the 'decision takers', ring Herrick Thwaite on Stoke-on-Trent (0782) 29681 ext 3531 or write to him at ICL, Westfields, West Avenue, Kidsgrove, Stoke-on-Trent ST7 1TL. Please quote reference CW1098.

These positions are open to both men and women.

International Computers

think computers – think ICL

ICL

SOFTWARE MANAGER

SELF-SERVICE TERMINALS to £12,000

My client for this assignment, apart from being a noted manufacturer of mainframe hardware, is additionally a leading supplier of terminal devices for many purposes. Many of these terminals are produced for general marketing, whilst others are devised for individual client requirements. Increasingly, the emphasis is on customer operation.

To support this important and growing area of its business, the company has decided to establish a specialised software group, for which the staff and expenditure budgets increase steeply over the coming five years. The management has decided to make the appointment of Manager at this stage, in order that he/she may take immediate control of the existing embryonic group.

The requirements for this position are a sound technical background in terminal and/or communications software, coupled with demonstrable ability to lead a professional group of software technicians.

The software division is located in a beautiful part of the country and, if necessary, costs of relocation will be paid. Other benefits include a generous salary, superannuation scheme, life assurance, etc.

Applicants should telephone A. P. BAKER on 01-499 4501 or send him a comprehensive C.V. at the address below, quoting.

REF. RW 48/1

OPPORTUNITY + SECURITY

FOR DEC PROGRAMMERS WITH A BACKGROUND IN BOTH HIGH AND ASSEMBLER LEVEL LANGUAGES, PREFERABLY WITH RSX-11-M

So often you must make a choice between security of employment and opportunity. This client of mine can offer you a combination of both.

The company is young (18 months) and still relatively small (under 30 staff) software house specialising in advanced real-time systems on PDP/11 and Intel hardware — there's the opportunity.

It is a wholly-owned subsidiary of a major international company, long established in electronics, which is backing it to the hilt — there's the security.

The salaries are competitive and will reflect your experience and capability, and there is an attractive package of fringe benefits. The location is Berkshire.

In the first instance, please 'phone TONY BAKER on 01-499 4501.

REF RW 48/2

COMPUTER SERVICES

salaries £12,000-£15,000 p.a.

LONDON based, some European travel

One of the world's leading corporations requires two managers to guide the development and marketing of their European Computer Services function. As members of the new European HQ staff, they will need to liaise with, and motivate the organisations of individual countries into fulfilling European objectives. Consequently applicants should be people whose tactful diplomacy masks a determined approach to achieving results.

MANAGER INTERNATIONAL ACCOUNTS

Many customers are multi-national corporations operating throughout Europe. The Manager International Accounts will co-ordinate sales activity to these companies across country boundaries. Through liaison with the individual countries sales management, an international account development plan is to be produced for each customer.

Subsequently, the incumbent will diplomatically monitor progress against this plan, at all times assisting the individual countries to work towards achieving European objectives.

The post demands a track record in sales management and offers an opportunity to enter a major corporation at a senior level. Remuneration, by salary only, will be in the range £12,000-£14,000 p.a.

RW 48/3

MANAGER STRATEGIC PLANNING

The actual title is Manager Planning and Marketing Analysis and the job function covers both planning and marketing activities. These activities will be performed at a European level, i.e. plans will be produced in conjunction with the individual countries which dovetail to form the operating basis for Europe.

The primary requirement is strong strategic and operational planning experience in the computer industry. An additional quality is the personality to guide individual management teams into a common approach thereby creating a more effective and profitable European venture. Constant visibility to top management allows you to forge your own career, whether in Europe or the U.S.A. Remuneration, by salary only, will be in the range £13,000-£15,000 p.a.

RW 48/4

Call DAVID J. HUTCHINSON ON 01-499 4501 for a confidential discussion

hutchinson-scoggins recruitment

47/48 New Bond Street (entrance in Maddox Street) London W1Y 0HE Telephone 01-499 4501

[illegible]

SOFTWARE FACTORY MANAGER

FIRST RATE SALARY + BENEFITS PACKAGE

A Unique Opportunity in Kent with a major corporation

The unusual job title reflects a unique and interesting post, part operations, part analysis, part technical but wholly MANAGERIAL.

The company is taking a radically new approach to the development of customised machine software and needs a manager for its production operations. The production team comprises primarily OPERATIONS staff with systems people in support. The customer software is created by parameter driven manufacturer's software on a personalised order basis. The manager will have total responsibility for a data take-on operation and for the assembly of host computer held, pre-tested generic software modules to the ordered specification, utilising a 370/148 shortly to be replaced by a 3031 and a 158 under VSI. This includes quality control and the introduction of further improvements to the production process.

Currently, you may be an Operations Manager, a Project Manager, a Data Processing Manager or someone responsible for the computer back-up to a hardware production line, but to make a success of this role you need to be a strong personality dedicated to achieving management objectives in a pioneering (and therefore sometimes difficult) environment.

Write in confidence, sending a resume, to DAVID HUTCHINSON.

RW 48/5

CONTRACTS

UNITED KINGDOM

PROGRAMMERS N. London	PL1 Software for message switching project — Immediate and urgent.
PROCESS CONTROL Herts and Scotland	DEC PDPII, RSX II, BASIC+, Digital Control Systems.
SOFTWARE DESIGNERS Wiltshire	Software for microbased data collection and distributed processing system.
PROGRAMMERS S Beds	PL1, DOS/CICS, Production Control experience. Three months — start mid December.

Call BRIAN DAWSON on 01-499 4501 for more details of these and other interesting contracts in Operations and Systems.

RW 48/6

EAST MIDLANDS

One of the longest standing names in the DEC Turnkey business is expanding and consequently needs top flight support and development staff. Together with an established company you can look forward to excellent career progression, and the opportunity to relocate to some of the cheapest housing in England.

CONSULTANT ANALYST/PROGRAMMER

c £6,500
+ Car
+ Relocation

These positions will appeal to people who see themselves one step away from management of software consultancy.

Being responsible for satisfactory service levels to a varied client base will draw on all of your abilities. A RSTS and BASIC background is essential and this, together with your analytical skills, could be your passport to a five figure career path.

RW 48/7

SYSTEMS ANALYSTS

c £6,500
+ Car
+ Relocation

Working on development projects, by yourself or as part of a team, demands creative flair, together with professionalism.

A commercial background, the ability to create confidence with your users and skills to warrant promotion to consultancy make you the Systems Analyst I want to talk to.

RW 48/8

SENIOR PROGRAMMERS

c £6,500
+ Relocation

My Clients current requirement is for senior people who have experience to be able to supervise up to three juniors at any one time.

A commercial background, the ability to create confidence with requirements. Future prospects are excellent and include a career path into consultancy and management.

RW 48/9

Please call GEOFF MARSH on 01-499 4501 for further information.

hutchinson-scoggins recruitment
47/48 New Bond Street *(entrance in Maddox Street)* London W1Y 0HE Telephone 01-499 4501

DP PROFESSIONALS

Berkshire £4,000-£6,500p.a.

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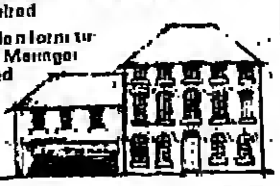

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The Royal Borough of Kensington and Chelsea has a requirement to develop a number of new on-line systems. In order to meet the growing demand for computer facilities, the Computer Department now requires:

PROJECT LEADER REF. 001

c £7,000 p.a.

To take responsibility for the management of a team, comprising a systems designer and a number of programmers, developing and maintaining computer systems. The Hardware / Software configuration is IBM 370-13B, DOS-VS, CICS, SPMOL
The main programming language is COBOL and the installation standards are based upon structured design and programming. Program development is via terminal using SPMOL.
If you have a minimum of two years' programming and two years' system experience and wish to develop your skills in an on-line environment, we would very much like to hear from you.

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c £6,500 p.a.

To take responsibility for the technical design of application systems and the guidance of programmers, working within a project team environment. Applicants for this position should have gained a minimum of two years' COBOL programming and one year's systems design experience.

PROGRAMMER REF. 003

c £5,500 p.a.

To take responsibility for specifying, developing and maintaining programs in COBOL and possibly RPG II. Applicants for this position should have had at least two years' COBOL programming experience.

JUNIOR PROGRAMMER REF. 004

c £4,000 p.a.

To design, code and test small to medium-sized COBOL programs. Applicants for this position should have received basic training and gained nine months' COBOL programming experience.
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The Royal Borough of KENSINGTON AND CHELSEA

Application form quoting appropriate reference number(s) from the Establishment Officer, Dept. 151, The Town Hall, Hornton Street, London W8 7NX. Tel. 01-937 5562 (24-hour answering service). Application form to be returned by 15th December, 1978.
The Council welcomes applications from suitably qualified Registered Disabled Persons.

THE SALES AND MARKETING BIT

The agonies of internal politics

EVERY company has to suffer the idiosyncrasies of internal politics. It is a sad commentary on human nature that this futile pursuit is an omnipresent reality in all aspects of business life.

Key personnel move to other companies to escape, or are unhappy in their job because of it; irrational and harmful decisions are made because of it; profitable opportunities are lost because of it; salesmen fail to secure orders because of it.

Politics is an amorphous cancer arising from such nasty sources as arrogance, chauvinism, egocentricity, autocracy, corruption, megalomania and our feudal heritage.

Politics is sterile.

This phenomenon often emanates from a conflict involving only two people, but it is not unknown for open warfare to be declared between entire company divisions and departments.

So how can the salesman pull business out of such a morass without getting his hands dirty?

The inevitable answer is: With extreme sensitivity and caution!

A classic situation is a clash between the purchasing department and a user department. The salesman may be making good progress in his negotiations with, say, the manager of the finance department for the supply of an interactive computing services in the context of financial planning, when suddenly, out of a clear blue sky, the manager of the purchasing department gets into the action: "No department has authority to order any supplies without a purchase order which in turn can only be generated with my formal approval." As opposed to "I am the only manager with the technical resources and authority to assess and order external computing facilities." Or even a cry from the data processing manager: "We have a computer of our own which is able to satisfy most of the company's requirements. Any use of external services must first have my sanction."

There is no easy and guaranteed solution to this kind of problem, but the action most likely to succeed is to get all the protagonists together. It is amazing how attitudes change when such people are face-to-face as opposed to delivering proclamations from their ivory towers.

The venue could be perhaps a working lunch or a formal meeting on the client's premises. The salesman's contribution to such a meeting is simply, "I want to put to your organisation the best possible proposition my company is able to offer, but I am not sure how I can do so and also satisfy all your individual requirements. Please tell me what I should do."

If this does not work there is only one real alternative for discovering the real decision maker: approach the situation via a non-political source.

There are usually only two areas of a company which are relatively free from personal politics: the very top or the very bottom of the hierarchical pyramid. If the salesman starts at the very top from the beginning (like I keep saying!) he doesn't have the problem. If he hasn't done so, then he must arrange for his sales manager to make contact with the managing director on his behalf.

At the other end of the scale, one usually discovers that the "shop-floor" intelligence network is reliable, and a consensus of opinion at that level will be a valuable input towards deciding where the majority of sales effort should be made.

The salesman must always be an apolitical animal in the eyes of the client.

TRADER

▽ *In last week's Sales Bit, a printer's gremlin generated a new phrase "The automatic buyer". Even though such a beast might make selling an easier job, Trader has yet to meet one. It should, of course, have said "the autocratic buyer".*

PRODUCT NOTES

Module connectors

CIRCUITS from most areas of electronics can be connected simply with the aid of new module connectors from Siemens suitable for sandwich and mother/daughter board configurations.

At present, this connector family comprises three basic constituents: one to three row pin connectors with straight or offset pins and a total of 81 pins, contact springs with twin contacts for solder or crimp connection and one to three-row contact spring casings with up to 81 pins. The contact spring latch in position on insertion into this casing.

Pin connectors for horizontal mounting on printed circuit boards are under preparation and the contact spacing on all types is 1/10 inch.

The crimping tool can also be supplied for rapid and neat connection of the contact springs to stripped wires, Siemens claimed.

It has a locking device which prevents the tool from opening before the crimp operation has been completed. The belted contact springs are run off a built-up reel.

While manual crimping tool is more suitable for laboratory work and small volume production, the crimping machine can be used for plug connector wiring in series production.

It can perform 900 to 1,200 crimps per hour, contact feed is automatic and it requires a 240 volt AC power supply.

Siemens AG (CW), Postfach 103, 8000 München 1, West Germany. Tel: (010 49 89) 234 8084.

Puzzle Answer

821 + 821 + 821 + 821 = 3,284.

Ascii through the Logic Gate

An epic in 32K words, by Richard Forsyth

Block 22 (A Block of Ice)

Simula's late-night broadcast has aroused Hex to more unsystematic activity. Leaving his colleagues he sets out towards Fort Ranfour. En route he encounters Johnny McNull, an inveterate collector of electronic baubles with a peculiar form of brain damage.

AFTER sending her warning to Hex, Simula stowed away the booster aerial and slipped back into the hard bed. She slept soundly. Her conscience was clear: she felt she had done her bit.

She woke the next morning to find the redoubtable Eleanor Benzedrine leaning over her. She assumed this was the moment of truth: they had come to drag her off to the brain-scanner.

"Get packed and ready to go," ordered Benzedrine. "You'll be leaving in an hour. You're going home."

Simula was perplexed. She had steeled herself to face a renewed inquisition. This was an anti-climax. "Home?" she queried, "but you need my background information on Hex." She still did not suspect that she had already fulfilled her part in Extracode's intricate stratagem and was now redundant.

"We have all the information we need," Benzedrine curtly informed her.

A glimmer of realisation dawned on her. If they had monitored her call to Hex, and his reply .... Perhaps she had been a pawn in their game. A gnawing doubt clutched at her stomach; but anything more she said would be incriminating, for herself and Hex, so she kept quiet and meekly followed Benzedrine out.

Meanwhile in another part of the Fort a meeting of the two surviving members of COBRA (Committee On Bug Rectifying Action) was in session.

"The Hexadecimal Kid and his damned Nullards are making us look like fools," complained Ivor Glitch, pacing angrily across the room.

"I don't think so," replied Extracode, unruffled.

Glitch fixed him with a venomous glare. "How can you say that? We've lost Kludge and sixty of our best operators. Only four survived the expedition. Their camp turned out to be an active volcano."

"That was pure bad luck. No, he's not making fools out of us," denied Extracode, "we're making fools of ourselves. We're using sledgehammers to crack a nut."

"I'll crack his nuts with a sledgehammer if I get near him!" stormed Glitch.

"We're taking him too seriously," soothed Extracode. "He's a small fry. He can only hurt us through our own mistakes."

"Well, what do you suggest then?" demanded Glitch. Extracode's patronising assumption of superiority displeased him. After all, he was the boss.

"If we give him some room to manoeuvre he'll start making his own blunders."

"I hope you're right. Anyway, next time we know where they're hanging out we'll have to be more careful how we handle them."

"I do know where they're hanging out, and I am being very careful about it."

"What!"

"They're back in Sprocket's Hole, at least they were last night. I've a feeling they'll be moving on now."

"You let them get away?" expostulated Glitch, too incredulous to be angry.

"I encouraged it," revealed the ice-cool Extracode.

"All right," said Glitch in resignation. "What's going on here?"

"I think you'll enjoy it more if I leave you a bit in the dark for the time being," answered Extracode suavely. "Let me just say that I've provided our friend Hex with the rope he needs to hang himself. I think this problem will be solved far sooner than you anticipate."

"You haven't forgotten the penalty for withholding data from the Database?"

"Most certainly not."

"Or for obstructing the advancement of the System?"

"A robot in my position can't afford to forget that."

"Then you'd better be sure your scheme doesn't misfire. If I have cause to question your reliability I shall hand you over without hesitation to Quality Control for refurbishing."

"I understand."

"Hm," snorted Glitch. "Now let's get on with the business in hand." He walked over to an RJE station where a printer had just finished spewing out forms on pre-printed stationery. These were the curriculum vitae of the applicants for Kludge's vacant job as Chief Dynamic Debugger. He hauled the printout over and dropped it with a thud on the table.

"Rather a long short list," remarked the unflappable Extracode.

Glitch looked at him, making a mental note to delve into Extracode's own murky past as soon as possible. There were said to be one or two skeletons in the cupboard of the distinguished inspector's career. Rumour had it that he had been involved in the great virtual machine cover-up fiasco.

"Here are the names," said Glitch, and began reading: "Eleanor Benzedrine, Gino Filonacci, James Hock, Andy MacRo, Rosanne Rose. I don't know why that incompetent bungler MacRo bothered to apply. As for Hock ...." He shrugged.

"I know the others, but who are Filonacci and Rose?" asked Extracode.

Glitch flicked through the papers. "Gino F. Fibonacci, Design Consultant. Doesn't have much to recommend him. It says something here about graphics expertise. We needn't waste much time on him. Rosanne Rose is a different kettle of fish altogether — the candidate approved by the System evaluation routine. She's the wife of Mike Rose, former lecturer in Telematics at Winograd University."

"But who's he?"

"He's the leader of the hush-hush Future System project."

Extracode looked unimpressed, but he didn't give up easily. "I would have thought," he suggested in his most emollient voice, "that if we're to have a female on the board Eleanor Benzedrine with all her experience would be a more suitable choice."

Glitch smiled for once. "You can forget that idea, old boy."

Before Extracode could counter, there was a knock at the door. Evidently one of the candidates had arrived early for interview.

"Come in," called Glitch irritably.

Hex and McNull strode in, each armed with one of Hock's terminators.

Glitch turned towards Extracode. "Is this your doing?"

"Not entirely," was the reply.

What's Extracode up to? Mischief

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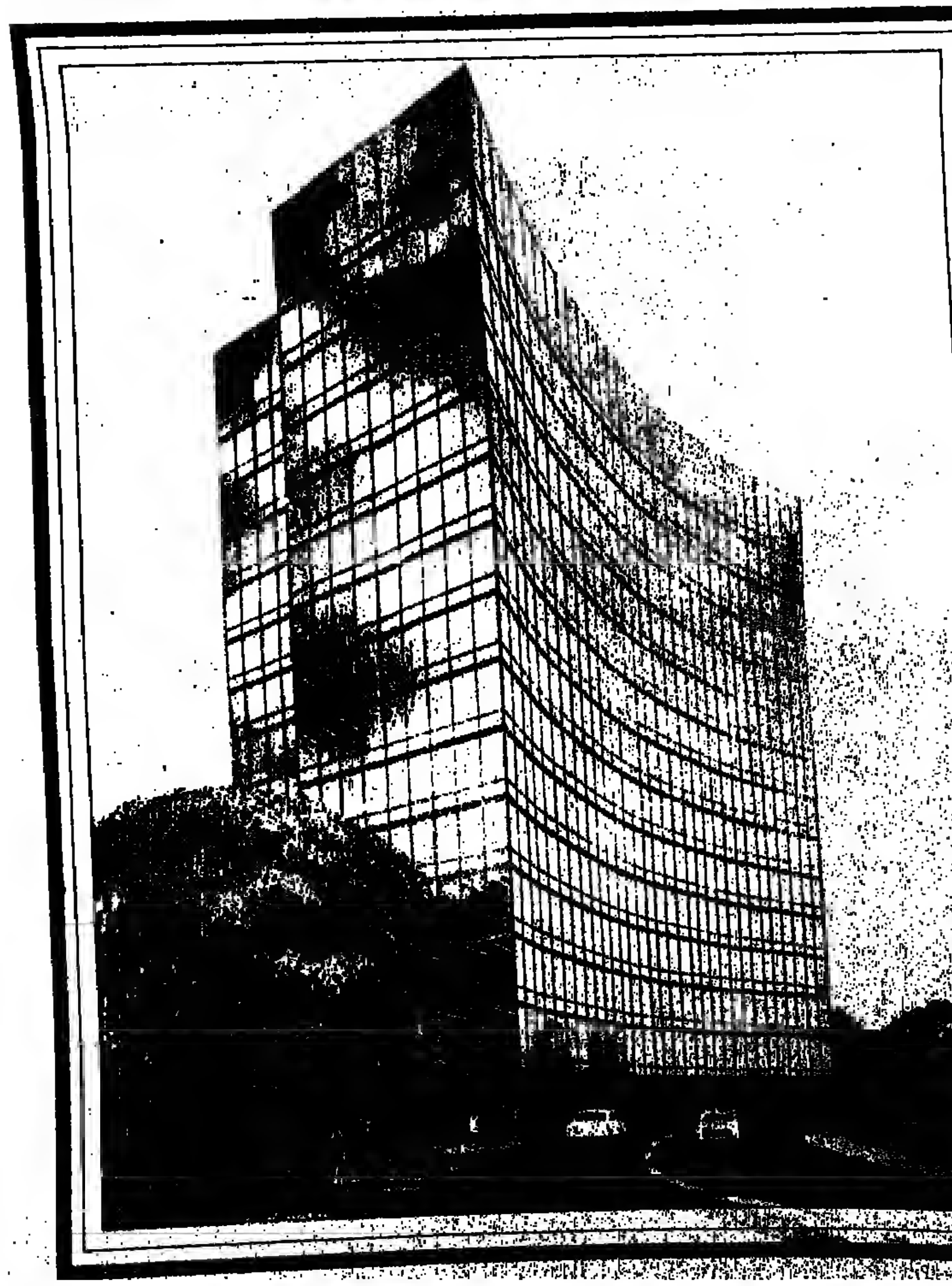

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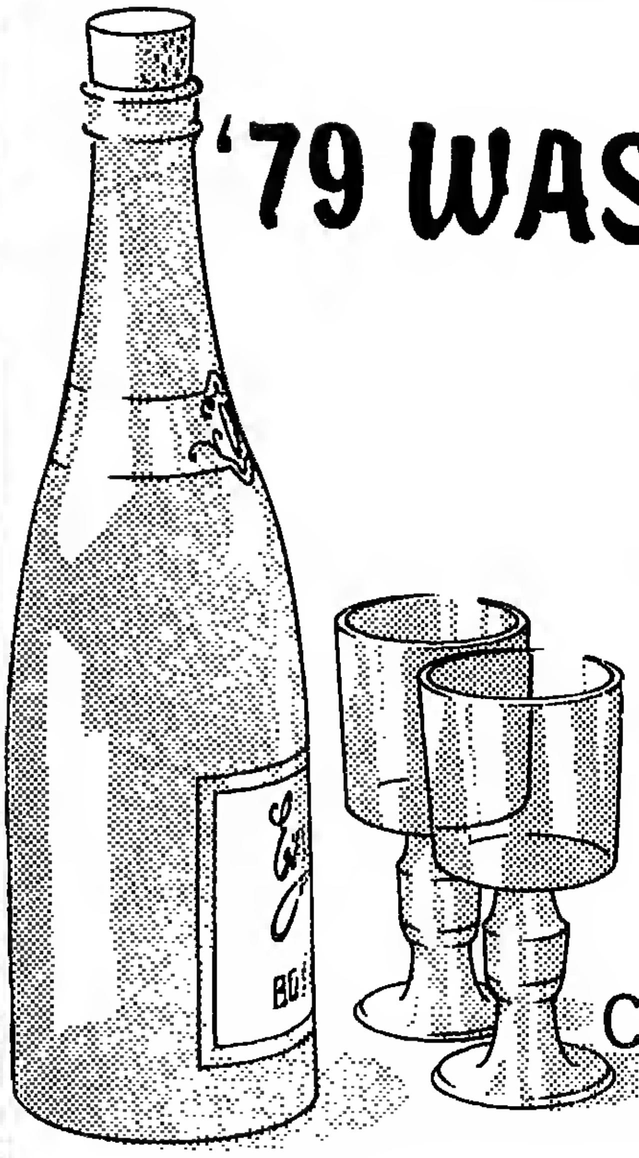

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